

Transforming Islamic Education through a Massive Open Online Course Model Based on Open Islamic Educational Resources

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Received: 29-01-2026

Revised: 30-01-2026

Accepted: 01-04-2026

Info Artikel

Abstract

Keywords:

Islamic Education, MOOC, OIER, Digital Transformation, Educational Technology

In the digital era, Islamic education faces significant challenges in ensuring broad and inclusive access to quality learning. This study aims to design, analyze, and implement a Mass Open Online Course (MOOC) based on Open Islamic Educational Resources (OIER) as a strategy to transform Islamic education. Using a qualitative Research and Development (R&D) approach, data were collected through in-depth interviews with experts in Islamic education and educational technology, observations of existing MOOC platforms, and document analysis. The findings indicate that OIER-based MOOCs play a substantial role in advancing the transformation of Islamic education by improving accessibility, learning quality, and institutional collaboration. Successful implementation is supported by three key pillars: inclusive technology design, a curriculum grounded in Islamic values, and the active involvement of stakeholders, including educators, learners, and the educational community. The developed MOOC integrates classical Islamic disciplines such as fiqh, aqidah, and Islamic history with 21st-century competencies, including critical thinking, digital literacy, and global communication, thus preserving the essence of Islamic values while enhancing contemporary relevance. Furthermore, the integration of OIER into the MOOC platform expands global access to Islamic educational resources, particularly for underserved communities, improves learning quality through interactive multimedia, and strengthens cross-institutional collaboration. Empirical results show an 18% increase in student understanding of the material after using the platform. Overall, this study concludes that OIER-based MOOCs have significant potential to transform Islamic education into a more inclusive, modern, and globally connected system without compromising its core values.

Kata kunci:

Pendidikan Islam, MOOC, OIER, Transformasi Digital, Teknologi Pendidikan

Abstrak.

Di era digital, pendidikan Islam menghadapi tantangan signifikan dalam memastikan akses yang luas dan inklusif terhadap pembelajaran berkualitas. Studi ini bertujuan untuk merancang, menganalisis, dan mengimplementasikan Kursus Daring Terbuka Massal (MOOC) berbasis Sumber Daya Pendidikan Islam Terbuka (OIER) sebagai strategi untuk mentransformasi pendidikan Islam. Dengan menggunakan pendekatan Penelitian dan Pengembangan (R&D) kualitatif, data dikumpulkan melalui wawancara mendalam dengan para ahli di bidang pendidikan Islam dan teknologi pendidikan, observasi platform MOOC yang ada, dan analisis dokumen. Temuan menunjukkan bahwa MOOC berbasis OIER memainkan peran substansial dalam memajukan transformasi pendidikan Islam dengan meningkatkan aksesibilitas, kualitas pembelajaran, dan kolaborasi kelembagaan. Implementasi yang sukses didukung oleh tiga pilar utama: desain teknologi inklusif, kurikulum yang berlandaskan nilai-nilai Islam, dan keterlibatan

aktif para pemangku kepentingan, termasuk pendidik, peserta didik, dan komunitas pendidikan. MOOC yang dikembangkan mengintegrasikan disiplin ilmu Islam klasik seperti fiqh, aqidah, dan sejarah Islam dengan kompetensi abad ke-21, termasuk berpikir kritis, literasi digital, dan komunikasi global, sehingga melestarikan esensi nilai-nilai Islam sekaligus meningkatkan relevansi kontemporer. Selain itu, integrasi OIER ke dalam platform MOOC memperluas akses global ke sumber daya pendidikan Islam, khususnya bagi komunitas yang kurang terlayani, meningkatkan kualitas pembelajaran melalui multimedia interaktif, dan memperkuat kolaborasi lintas institusi. Hasil empiris menunjukkan peningkatan pemahaman siswa terhadap materi sebesar 18% setelah menggunakan platform tersebut. Secara keseluruhan, studi ini menyimpulkan bahwa MOOC berbasis OIER memiliki potensi signifikan untuk mengubah pendidikan Islam menjadi sistem yang lebih inklusif, modern, dan terhubung secara global tanpa mengorbankan nilai-nilai intinya.

INTRODUCTION

The development of digital technology in the global era has brought fundamental changes in various aspects of human life, including the education system (Aprilianto et al., 2025; C. Wang et al., 2024). Digital transformation is driving a paradigm shift in learning from conventional face-to-face models to bold learning that is more flexible, open, and not bound by the limitations of space and time (Abdurrahman, 2025; Sufiana et al., 2025). In this context, Islamic education is faced with increasingly complex challenges, particularly in providing access to education that is inclusive, equitable, and relevant to the needs of modern society (Arif et al., 2024; Cahyani et al., 2025). Many Islamic educational institutions still face limitations in technological infrastructure, learning resources, and pedagogical models that are adaptive to digital developments (Kango et al., 2021; Saadah et al., 2025). As a result, the gap in access to Islamic education between urban and remote areas remains a serious issue. Amidst this situation, Massive Open Online Courses (MOOCs) have emerged as a digital learning innovation that offers significant potential for expanding access to education on a massive scale without geographical limitations (Siemens, 2004). MOOCs enable the delivery of learning on a large scale at a relatively low cost, thus potentially becoming a strategic solution to address the challenges of equity and inclusivity in Islamic education in the digital age.

Numerous previous studies have examined the implementation of MOOCs in various educational contexts, both higher education and professional education. These studies generally highlight the effectiveness of MOOCs in increasing access to learning, learning flexibility, and developing 21st-century competencies (Gamage et al., 2016, 2018; Karnouskos, 2017). However, in the context of Islamic education, empirical studies related to the use of MOOCs are still relatively limited and have not developed optimally. (Gilliat-Ray, 2020; Muthoin & Isbah, 2024; Sahin, 2018) Found that most of the MOOC platforms currently available have not maximally integrated Islamic educational content and are still dominated by general or secular materials. (Abdelfattah et al., 2023; Almeshal, 2024) It also revealed that existing MOOC designs have not fully adapted to the characteristics of Islamic education, particularly in teaching the Qur'an, Hadith, and other Islamic disciplines that require a specific pedagogical approach (Dabbagh & Kitsantas, 2012) emphasizes that the success of MOOCs is largely determined by pedagogical design that is contextual, interactive, and oriented toward active student engagement. These findings indicate that although MOOCs have significant potential, their application in Islamic education still faces various conceptual and practical limitations.

Responding to these challenges and previous research findings, the integration of MOOCs and Open Islamic Educational Resources (OIER) is a relevant and strategic approach to developing digital Islamic education. OIER is an adaptation of the Open Educational Resources (OER) concept, specifically providing Islamic education learning resources that are open, freely

accessible, and allow for continuous adaptation and development. The integration of OIER-based MOOCs is believed to expand access to Islamic education, especially for communities in areas difficult to reach by formal educational institutions. Therefore, this study aims to design, analyze, and implement an OIER-based MOOC as a model for transforming Islamic education in the digital era. Specifically, this study seeks to identify design principles, pedagogical approaches, and implementation mechanisms for MOOCs that align with the values and characteristics of Islamic education. With the increasing penetration of the internet and digital technology, the development of OIER-based MOOCs is expected to be a strategic solution in improving the quality and equality of Islamic education (Haryati et al., 2024).

Although the concepts of MOOCs and Open Islamic Educational Resources (OERs) have been widely discussed in the educational literature, systematic studies integrating MOOCs with OERs in the context of Islamic education are still very limited. Previous studies tend to discuss MOOCs in general without focusing on the utilization of OERs, or highlight Islamic education without directly examining it with large-scale digital learning models. This gap highlights the urgent need for research that not only adopts digital technology but also develops learning models aligned with Islamic values. Therefore, this study argues that the development of an OER-based MOOC represents an innovative step to bridge the gap between the need for access to Islamic education and the demands of digital transformation. The novelty of this research lies in the conceptual integration and implementation of MOOCs and OERs as an inclusive, adaptive, and quality-oriented Islamic education model. Furthermore, this study analyzes the impact of the implementation of these models on the accessibility and quality of Islamic education, thus providing theoretical and practical contributions to the development of Islamic education in the digital era.

RESEARCH METHODS

This research uses a Research and Development (R&D) approach (Creswell, 2014; Rindrayani et al., 2025; Sari et al., 2025). With the aim of designing, developing, and implementing a Massive Open Online Course (MOOC) based on Open Islamic Educational Resources (OIER) as a model for transforming Islamic education in the digital era. The R&D approach was chosen because it allows for systematic development of educational products through repeated stages of evaluation and revision, so that the resulting product has conceptual validity and practical implementation. This research design adapts the development model proposed by (Borg & Gall, 1984), This includes research and information gathering, planning, initial product development, field trials, product revisions, and dissemination and implementation. Each stage is designed to ensure that the OIER-based MOOC being developed meets the needs of the students.

The data in this study consisted of qualitative and quantitative data. Qualitative data were obtained through in-depth interviews with lecturers, Islamic education experts, and educational technology experts, as well as through observations of the learning process and participant interactions within the MOOC platform. In addition, qualitative data were sourced from documents such as the curriculum, learning modules, and Open Islamic Educational Resources materials used in the MOOC development. Quantitative data were obtained from questionnaires completed by MOOC participants and from learning outcome tests administered before and after the learning process. This combination of data sources was used to obtain a comprehensive picture of the development process, implementation, and effectiveness of the OIER-based MOOC.

The population in this study was all students in the Distance Education Study Program at UIN Siber Syekh Nurjati Cirebon, spread across Indonesia. Given the characteristics of development research, which emphasizes the suitability of the subject to the product development objectives, the sampling technique used was purposive sampling. The sample was selected based on certain criteria: students with adequate internet access, basic experience in online learning, and willingness to participate in the entire MOOC learning series. The purpose of selecting samples using this technique is to ensure that the data obtained is truly relevant and representative in evaluating the effectiveness and practicality of OIER-based MOOCs.

In this study, the researcher acted as the primary instrument, particularly in the collection and analysis of qualitative data. The researcher's presence included direct involvement in the MOOC design process, conducting interviews, observing learning activities, and interpreting data obtained from various sources (Kruschke, 2010). The researcher also played a role in coordinating product trials and facilitating communication between participants, lecturers, and MOOC platform administrators. To maintain data objectivity and validity, the researcher applied source and method triangulation techniques and conducted critical reflection on each stage of the research.

Data analysis in this study was conducted using a mixed-methods approach (Perrier et al., 2003). Qualitative data obtained from interviews, observations, and documentation were analyzed using thematic analysis, which includes data reduction, coding, categorization, and drawing conclusions. This analysis aims to identify patterns, themes, and meanings related to the design, implementation, and development challenges of an OIER-based MOOC. Meanwhile, quantitative data obtained from questionnaires and learning outcome tests were analyzed using descriptive statistics to illustrate data trends, and inferential statistics to examine improvements in participant learning outcomes after participating in the OIER-based MOOC (Stockemer, 2019). This analytical approach is used to provide a comprehensive overview of the contribution of OIER-based MOOCs in improving access to and quality of Islamic education..

RESULTS AND DISCUSSION

Result

The research results show that the development of a Massive Open Online Course (MOOC) platform based on Open Islamic Educational Resources (OIER) has resulted in an online learning system comprehensively designed to support the transformation of Islamic education. This platform was developed by integrating the principles of openness, inclusivity, and Islamic values into all learning components. In general, the platform's design is aimed at addressing the needs of Islamic education learners spread across various regions with varying access conditions, while maintaining the quality and credibility of the Islamic material presented.

From a design perspective, the OIER-based MOOC platform is equipped with various key features that support the online learning process, including interactive learning modules, learning videos, automated quizzes, discussion forums, and a digital library containing open Islamic educational resources. These features are designed to facilitate both independent and collaborative learning. The presence of an OIER-based digital library allows participants to access credible, open, and sustainable Islamic materials, thus strengthening the platform's function as a center for Islamic education learning resources. The platform's primary uniqueness lies in the integration of Islamic values into its content and learning approach. The material presented focuses not only on theoretical aspects but also connects Islamic teachings to the context of modern life through the use of contemporary Islamic case studies. This approach aims to increase the relevance of learning

and help participants understand the implementation of Islamic values in today's social realities. Furthermore, the user interface is designed to be responsive and inclusive, allowing it to be accessed across various devices, such as desktop computers, tablets, and smartphones.

A user needs analysis was conducted through a survey of 150 respondents, consisting of 100 Distance Learning students from UIN Siber Syekh Nurjati Cirebon and 50 educational staff. The survey results showed that 90% of respondents expressed a high need for an online learning platform that provides easy access to credible and well-curated Islamic materials. This finding indicates that access to reliable Islamic learning resources remains limited, especially for learners outside of formal educational settings. In addition to the need for access to materials, the survey also showed that 75% of respondents considered interactive features to be a very important aspect of an online learning platform. Respondents expected discussion forums, online communication spaces, and feedback mechanisms that facilitate interaction between participants, instructors, and the learning community. These findings formed the basis for the development of interactive features in the OIER-based MOOC, which is designed to increase participant engagement and active participation throughout the learning process. The initial implementation of the OIER-based MOOC platform was conducted through a trial on two Distance Learning (DL) study groups with a total of 100 participants from heterogeneous geographic and social backgrounds. The trial results showed an increase in participation in online learning, as reflected in an average duration of platform use of 5 hours per week. This data demonstrates that the platform is able to consistently attract and maintain participant engagement in the learning process..

The platform's effectiveness was evaluated using various methods, including pre- and post-tests, user satisfaction surveys, user activity data analysis, and in-depth interviews. Paired t-test results showed a significant increase in material comprehension, with an average pre-test score of 70% increasing to 88% in the post-test ($p < 0.05$). These findings indicate that the use of the OIER-based MOOC significantly contributed to improved comprehension of the learning material, with an 18% increase after using the platform. In terms of user satisfaction and engagement, survey results indicated a high level of satisfaction with the content quality and ease of use of the platform, with an average satisfaction score of 4.5 out of 5. Analysis of platform log data also indicated that 85% of participants successfully completed the assigned learning modules, with an average weekly access time of 5 hours. Furthermore, a simple linear regression analysis revealed a positive relationship between platform access duration and participants' final scores, indicating that the intensity of platform use contributed to learning outcomes.

Despite the positive results, several challenges remained during the implementation process, particularly limited internet access in remote areas and low digital literacy among some participants. To address these challenges, solutions developed include providing learning content that can be accessed offline, as well as providing training and mentoring for educators and participants in utilizing MOOC technology. These efforts are expected to increase the sustainability and effectiveness of the OIER-based MOOC implementation as a model for inclusive and adaptive transformation of Islamic education..

DISCUSSION

The results of this study indicate that the development and implementation of a MOOC based on Open Islamic Educational Resources (OIER) is a strategic response to the challenges of transforming Islamic education in the digital era. These findings reinforce the view that digitalization of education is not only related to technology adoption but also requires a

reconstruction of learning designs that align with the values, context, and needs of learners (Harahap et al., 2025; Mhlongo et al., 2023; Schmidt & Tang, 2020; Suhendi, 2023). In the context of Islamic education, these challenges become even more complex because learning is oriented not only toward knowledge transfer but also toward internalizing Islamic values. Therefore, the success of the OIER-based MOOC platform in increasing participant access, engagement, and understanding demonstrates that digital technology can serve as an effective medium for expanding the reach of Islamic education without diminishing its normative essence. This finding aligns with the theory of digital transformation in education, which emphasizes the importance of the alignment between technology, pedagogy, and cultural values, particularly in the context of values-based education such as Islamic education.

From a learning design perspective, the integration of interactive features such as digital modules, learning videos, automated quizzes, and discussion forums demonstrates that MOOC-based learning can accommodate the principles of active and self-directed learning. These results support the view of (Lan & Hew, 2020; K. Wang & Zhu, 2019), who asserted that the effectiveness of MOOCs is highly dependent on pedagogical design that encourages cognitive and social engagement of participants. In this study, the platform design not only emphasizes technical aspects but also pays attention to the user learning experience (learner experience), as reflected in the high module completion rate and platform access duration. This demonstrates that responsive and inclusive design can reduce technical barriers while enhancing learning comfort. Thus, OIER-based MOOCs function not only as a means of content distribution but also as a digital learning environment that encourages interaction, reflection, and collaboration in Islamic education learning.

The main uniqueness of this research finding lies in the integration of Islamic values into the content and learning approach of MOOCs. The results show that the use of Islamic case studies in a modern context increases the relevance of the material and helps participants connect Islamic teachings with contemporary social realities. This finding strengthens the argument that Islamic education needs to move beyond a normative-dogmatic approach to a contextual and applied approach. (Palange, 2022) previously highlighted the weak adaptation of MOOCs to the needs of Islamic education, particularly in teaching religious material that is textual and normative. This research shows that these weaknesses can be overcome through OIER-based content design, which allows for flexibility, openness, and contextualization of the material. Thus, OIER-based MOOCs have the potential to become a learning model that bridges Islamic scholarly traditions with the demands of 21st-century learning.

The results of the user needs analysis reinforce the urgency of developing an OIER-based MOOC in Islamic education. The high percentage of respondents who desired easy access to credible Islamic learning materials indicates a persistent gap between learners' needs and the availability of well-curated Islamic learning resources. This finding aligns with the Open Educational Resources literature, which emphasizes that open access is key to educational equity, especially for groups in peripheral areas or those with limited resources. In the context of Islamic education, OIER plays a crucial role in ensuring that accessible materials are not only open but also scientifically valid and compliant with Islamic values. Therefore, integrating OIER into MOOC platforms addresses not only the issue of access but also the quality and credibility of Islamic education learning.

The high demand for interactive features, as demonstrated in the user survey, indicates that Islamic education learners no longer view online learning as a passive activity. This finding

supports the connectivism theory, which emphasizes that learning in the digital age occurs through networking, interaction, and the exchange of knowledge between individuals. The discussion forums and online communication features embedded in OIER-based MOOCs have been shown to increase participant participation, as reflected in access duration and module completion rates. This demonstrates that digital-based Islamic education learning needs to be designed as a social process, not simply a content delivery. Thus, OIER-based MOOCs can function as collective learning spaces, enabling the formation of a global and inclusive Islamic learning community.

Initial implementation of the platform with Distance Learning participants from geographically heterogeneous backgrounds provides empirical evidence of the flexibility and scalability of OIER-based MOOCs. The average platform usage time of five hours per week indicates that participants do not simply access the platform sporadically, but rather make it an integral part of their learning process. This finding is important because one criticism of MOOCs is low retention and engagement rates. In the context of this research, contextual learning design, relevant materials, and interactive features have been shown to increase participant commitment to the learning process. This suggests that OIER-based MOOCs have the potential to address classic challenges in online learning, particularly in Islamic education.

The significant improvement in participant learning outcomes, as demonstrated by the difference in pre-test and post-test scores, strengthens the argument that OIER-based MOOCs not only improve access but also the quality of learning. The 18% increase in material comprehension indicates that OIER-based online learning can produce meaningful cognitive gains. This finding aligns with research by Zhang, Perris, and Kupperman (2018), which states that well-designed online learning can produce learning outcomes equivalent to, or even superior to, conventional learning. In the context of Islamic education, these results are important because they demonstrate that digitalization does not inherently reduce the quality of learning, as long as the design and content are systematically and value-based. The high level of user satisfaction with the OIER-based MOOC platform indicates that usability and content quality play a crucial role in the success of online learning. An average satisfaction score of 4.5 out of 5 indicates that participants felt comfortable and supported in the learning process. This finding supports the learner-centered learning approach, which places the learner's learning experience at the center of the learning design. Furthermore, log data showing an 85% module completion rate indicates that the platform is relatively successful in addressing the dropout issue that often occurs in MOOCs. Thus, OIER-based MOOCs can be viewed as a sustainable and learner-oriented online learning model.

The results of the regression analysis, which showed a positive relationship between access duration and participants' final scores, offer important implications for developing online learning policies. These findings indicate that the intensity of interaction with the platform directly contributes to the achievement of learning outcomes. In the context of Islamic education, this suggests that MOOC-based learning can encourage learners to engage more deeply with Islamic material, as long as the platform is designed to support exploration and reflection. Therefore, Islamic education administrators need to consider strategies to increase sustained engagement, such as gamification, project-based learning, or the integration of reflective activities based on Islamic values. Despite these positive results, this study also identified several challenges, particularly related to limited internet access and low digital literacy in some regions. These findings confirm that the digital transformation of Islamic education cannot be separated from the issue of the digital divide. Therefore, providing offline content and digital literacy training for educators

and participants is a relevant strategic step. This approach aligns with the principle of inclusivity in education, which emphasizes that technological innovation must be accompanied by efforts to empower users. Therefore, the success of OIER-based MOOCs is determined not only by the quality of the technology but also by the readiness of the overall education ecosystem. Overall, the discussion of the research findings confirms that the OIER-based MOOC is an innovative model capable of addressing the challenges of transforming Islamic education in the digital era. The integration of open learning resources, contextual pedagogical design, and Islamic values distinguishes this model from conventional MOOC initiatives. The primary contribution of this research lies in providing an empirical and practical framework for the development of inclusive, high-quality, and sustainable digital Islamic education. Thus, this research not only enriches the literature on MOOCs and OER but also provides strategic implications for policymakers, Islamic education managers, and learning technology developers in designing an Islamic education system that is adaptive to changing times.

CONCLUSION

This study found that the integration of Open Islamic Educational Resources (OIER) into MOOCs not only improves access to and understanding of the material but also strengthens the internalization of Islamic values in online learning. Contrary to the common belief that online learning weakens reflection on religious values, the study results show that open, credible, and contextual Islamic content actually encourages participants' reflective engagement. This finding broadens the focus of MOOC research, which has previously focused on technical and cognitive aspects. With appropriate pedagogical design, OIER in MOOCs serves as a means of strengthening Islamic values, not simply a medium for distributing digital knowledge.

Theoretically, this study contributes to the development of digital Islamic education through an integrated model of MOOCs and OIER based on Islamic values. This model broadens the discourse previously dominated by secular perspectives and enriches the study of Open Educational Resources in an Islamic context. Furthermore, this study demonstrates that digital learning theory can be adapted without losing its religious character. Practically, these findings are relevant for education administrators, technology developers, and policymakers seeking to expand access to Islamic education, especially in remote areas. This research also offers guidance on the design and implementation of MOOCs that meet the needs of modern Islamic education.

This study has several limitations. First, the research context was limited to Distance Education students at a single institution, so generalization of the results requires caution. Second, the MOOC implementation duration was relatively short, so its long-term impact on the internalization of Islamic values cannot be comprehensively evaluated. Third, the research focused more on learning design and effectiveness, so the social, cultural, and psychological factors of participants were not explored in depth. Therefore, further research is recommended to involve a broader context, longer duration, and a more exploratory methodological approach to enrich the study of digital Islamic education.

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