

STUDY OF ADAPTIVE ADMINISTRATIVE MANAGEMENT BASED ON TECHNOLOGY IN MASSIVE OPEN ONLINE COURSES WITH NAHWU-SHARAF MATERIAL FOR DISTANCE EDUCATION

Achmad Anwar Abidin
Universitas Terbuka, Tangerang Selatan, Indonesia
achmad.office@ecampus.ut.ac.id

Abstract: The development of digital technology has encouraged the transformation of learning systems in universities, including Arabic language education, especially Nahwu and Sharaf courses. This study aims to comprehensively describe and analyze the management of administration based on Massive Open Online Courses (MOOCs) in Nahwu and Sharaf courses through a systematic literature review (SLR). This research uses a descriptive qualitative approach strengthened by a review of reputable international literature with a focus on four main dimensions: planning, implementation, evaluation, and documentation of online learning administration. The results of the study show that MOOC-based learning administration can increase the effectiveness of material management, student active participation, validity of online evaluations, and academic documentation in a systematic and integrated manner. The use of multimedia, including video, infographics, audio podcasts, asynchronous discussion forums, and AI-based adaptive quizzes, supports a more interactive, flexible, and student-centered learning process. This study proposes a conceptual framework for MOOCs Adaptive Management Administrative (MAMA) as a model for managing digital education in Islamic Religious Education and Arabic courses in universities in the era of technological disruption.

Keywords: *learning administration, MOOCs, Nahwu and Sharaf, online learning, Islamic education management*

Abstrak: Perkembangan teknologi digital telah mendorong transformasi sistem pembelajaran di universitas, termasuk pendidikan bahasa Arab, terutama kursus Nahwu dan Sharaf. Penelitian ini bertujuan untuk mendeskripsikan dan menganalisis secara komprehensif pengelolaan administrasi berdasarkan Massive Open Online Courses (MOOCs) dalam mata kuliah Nahwu dan Sharaf melalui tinjauan literatur sistematis (SLR). Penelitian ini menggunakan pendekatan kualitatif deskriptif yang diperkuat dengan tinjauan literatur internasional bereputasi dengan fokus pada empat dimensi utama: perencanaan, implementasi, evaluasi, dan dokumentasi administrasi pembelajaran online. Hasil penelitian menunjukkan bahwa administrasi pembelajaran berbasis MOOC dapat meningkatkan efektivitas pengelolaan materi, partisipasi aktif mahasiswa, validitas evaluasi online, dan dokumentasi akademik secara sistematis dan terintegrasi. Penggunaan multimedia, termasuk videografi, infografis, podcast audio, forum diskusi asinkron, dan kuis adaptif berbasis AI, mendukung proses pembelajaran yang lebih interaktif, fleksibel, dan berpusat pada siswa. Penelitian ini mengusulkan kerangka konseptual Adaptive MOOCs Administrative Management (MAMA) sebagai model pengelolaan pendidikan digital dalam Pendidikan Agama Islam dan mata kuliah bahasa Arab di perguruan tinggi di era disrupsi teknologi

INTRODUCTION

The rapid advancement of information and communication technology has transformed the landscape of higher education, giving rise to a new paradigm of learning administration that is no longer confined to conventional classrooms (Samanta and Banerjee, 2025). Digital transformation has encouraged universities to redesign learning systems to be more flexible, accessible, efficient, and responsive to the increasingly diverse needs of learners. In this evolving educational ecosystem, Massive Open Online Courses (MOOCs) have emerged as one of the most influential innovations in twenty-first century education, enabling open, large-scale, and digitized learning experiences accessible to millions of learners worldwide (Anson, 2024; Goundar, 2024).

The emergence of MOOCs represents more than a technological trend; it signifies a fundamental shift in the management and administration of learning in higher education institutions. MOOCs have altered the operational structure of educational administration, including curriculum planning, instructional material management, learning implementation, assessment systems, academic documentation, and learner analytics. In this context, Learning Management Systems (LMS) such as Moodle, Canvas, and Coursera function not only as platforms for content delivery but also as integrated infrastructures for educational administration and digital learning governance (Czerkowski and Gonzales, 2014).

Historically, MOOCs were first introduced widely in 2008 through the course “Connectivism and Connective Knowledge” initiated by George Siemens and Stephen Downes (Dabbagh et al., 2015). The term “MOOC” was coined by Cormier and Alexander to describe an open learning model characterized by massive participation without geographical limitations (Haron et al., 2019). The global expansion of MOOCs reached its peak in 2012, famously referred to by The New York Times as “The Year of the MOOC,” marked by the establishment of major platforms such as Coursera, edX, and Udacity, which provided thousands of online courses from leading universities worldwide.

From a theoretical perspective, MOOCs stand at the intersection of two dominant learning paradigms: connectivism and behaviorism-cognitivism. Connectivism, developed by Siemens (2005), views learning as a process of creating connections among nodes of knowledge within the digital networks. Consequently, MOOCs developed under this paradigm, commonly referred to as cMOOCs, emphasize collaboration, knowledge co-construction, and peer interactions. In contrast, xMOOCs, which dominate most commercial platforms, are grounded more heavily in behaviorist and cognitivist traditions, emphasizing structured knowledge transmission through video lectures, quizzes, and automated assessments (Conole 2016; Nielsen 2020).

The growing body of literature on MOOCs demonstrates both the significant opportunities and critical challenges of digital learning implementation. Hew and Cheung (2014), through an analysis of 11 MOOCs studies, identified instructional design quality, content relevance, social interaction effectiveness, and clarity of learning administration systems as crucial factors influencing learner satisfaction and success. Similarly, Veletsianos and Shepherdson's (2016) systematic review revealed that existing MOOCs research remains excessively focused on technical aspects while often neglecting deeper pedagogical and administrative dimensions (Gameel, 2017; Khan & Tajamul, 2022). Furthermore, studies indicate that MOOCs continue to face serious structural problems related to learner engagement and course completion rates. Research has shown that average MOOCs completion rates range only between 5% and 15%, highlighting substantial issues in participant retention (Celik & Cagiltay, 2024; Karsen et al., 2023). A comprehensive analysis of 221 MOOCs courses further demonstrated that the quality of learning administration design is significantly correlated with learner completion rates (Alzahrani, 2018; Kulkarni & Bhattachary, 2025). These findings underscore the importance of examining how MOOCs learning-administration systems are designed, implemented, and managed.

In the broader context of digital education, learning administration refers to an integrated management system encompassing the planning, organization, implementation, supervision, and

evaluation of educational activities within virtual environments (Shah et al. 2021). Dabbagh and Bannan-Ritland (2005) defined online learning administration as the process of organizing and controlling all learning components within a digital ecosystem. As educational technologies continue to evolve, this concept has expanded to include advanced dimensions such as learning analytics, gamification, and artificial intelligence (AI) integration (Vu et al. 2016).

Several influential theoretical frameworks have further strengthened the conceptual foundation of digital learning administration. Anderson's (2008) "Equivalency Theorem" proposes that meaningful online learning can be achieved through at least one of three forms of interaction: student-teacher, student-student, or student-content interaction. This framework has direct implications for MOOCs administration, where digital learning managers must ensure that these interaction pathways are effectively facilitated within online systems (Gameel, 2017; Khalil & Ebner, 2015). Likewise, Garrison, Anderson, and Archer (2000) developed the Community of Inquiry (CoI) framework, which identifies teaching presence, social presence, and cognitive presence as essential elements of quality online learning. This framework provides a critical theoretical basis for designing MOOCs administration systems that move beyond content digitization toward the creation of authentic and meaningful digital learning ecosystems (Fiock, 2020; Richardson et al., 2012).

Despite the rapid global development of MOOCs, the implementation of digital learning in

Islamic education—particularly in Arabic language instruction—presents distinctive pedagogical and administrative challenges. Courses such as Nahwu (Arabic grammar) and Sharaf (Arabic morphology) demand not only a conceptual understanding of grammatical structures but also intensive repetitive practice, mastery of classical Arabic terminology, and the ability to apply grammatical rules within authentic religious texts such as the Qur'an and Hadith (Benchehda et al., 2025). This complexity distinguishes the administration of Nahwu and Sharaf learning from the administration of other modern language courses (Akzam & Zubaidah, 2024; Nurdin & Anshari, 2024).

Research on digital-based Arabic learning further confirms these challenges. Studies have identified several obstacles in Arabic digital learning environments, including the complexity of the Arabic writing system (*kitabah*), limited availability of high-quality Arabic language software support, and insufficient authentic digital learning content that meets academic standards (Auliya et al., 2025). These issues indicate the necessity of a specialized approach to designing MOOCs administration systems for Arabic language learning.

Additional studies have also demonstrated the importance of adaptive and technologically responsive systems in grammar-based language instruction. Dodigovic's (2013) research on Intelligent Tutoring Systems (ITS) revealed that adaptive learning systems capable of providing real-time feedback significantly improve learners' achievement in grammar acquisition (Slavuj et al., 2015).

Such findings are highly relevant to Nahwu and Sharaf instruction, which relies heavily on repetitive exercises and immediate corrective feedback. In this regard, MOOCs equipped with adaptive quizzes and automated feedback mechanisms may replicate the individualized tutorial functions traditionally found only in face-to-face learning environments (Al-Hamad, 2024).

Moreover, Rashid et al. (2019), in their study of Arabic e-learning implementation in Malaysia, found that interface design sensitive to Arabic linguistic characteristics—such as right-to-left (RTL) writing orientation and the complexity of *harakat*—significantly influenced system usability and learner motivation (Mosa & Kakehi, 2015). These findings imply that MOOCs administrators must ensure that the technological infrastructure employed is fully compatible with the unique characteristics and pedagogical needs of Arabic language learning (Isnaini, 2022).

Within the context of Islamic higher education in Indonesia, the integration of MOOCs into Nahwu and Sharaf courses represents an important intersection between the richness of classical Islamic intellectual traditions and contemporary digital technologies. Universitas Terbuka, the largest distance education institution in Indonesia, occupies a strategic position in the development of MOOC-based learning because of the geographically dispersed nature of its students and their diverse educational backgrounds (Rosetta et al., 2020). This condition makes research on MOOCs-based learning administration management in Nahwu and Sharaf courses not only academically significant but also practically urgent.

Based on these considerations, this study aims to: (1) describe the MOOCs-based learning administration planning system in Nahwu and Sharaf courses; (2) analyze the implementation of online learning administration comprehensively; (3) examine the mechanisms of evaluation and learning documentation within the MOOCs system; and (4) formulate a conceptual framework for adaptive and integrated digital learning administration management. This study is expected to contribute both theoretically and practically to the development of digital learning administration systems in the fields of Islamic Religious Education and Arabic language learning in higher education institutions.

METHOD

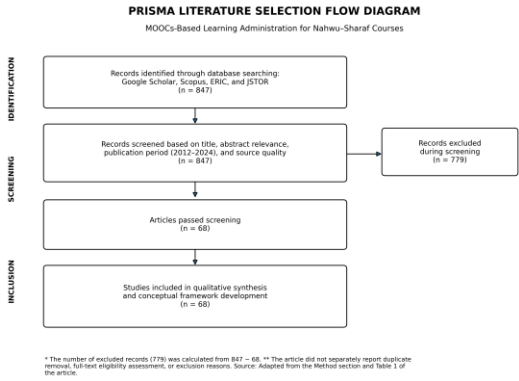
This study used a descriptive qualitative approach strengthened by a systematic literature review (SLR) referring to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol (Sutton et al., 1999). This approach was chosen because it allows for a comprehensive synthesis of previous research findings while generating an in-depth contextual analysis of MOOC-based learning administration practices.

Primary data sources come from three categories: (1) learning scenario documents of the Nahwu and Sharaf MOOCs used in Indonesian Islamic universities; (2) articles in reputable international journals (Scopus, Web of Science, Q1-Q2) published between 2012-2024 on the topics of MOOCs, online learning administration, Arabic language

e-learning, and digital assessment in higher education; and (3) policy documents and technical guidance for the development of MOOCs from leading international platforms.

Table 1: Number of article result

No	Search Keywords	Database	Initial Results	Article Passed Screening
1	MOOCs AND Arabic language learning	Google Scholar, Scopus	214	18
2	Online learning administration AND higher education	ERIC, Scopus	176	14
3	Digital assessment AND language acquisition	JSTOR, Scopus	143	11
4	E-learning AND Islamic education	Google Scholar, ERIC	189	15
5	Learning management system AND grammar teaching	Google Scholar, JSTOR	125	10
Total			847	68
			Articles	Articles



Picture 1. PRISMA Diagram

Data analysis was carried out through three stages: (1) data reduction through thematic coding using Miles, Huberman, and Saldana's (2014) approach; (2) presentation of data in the form of a synthesis matrix and conceptual diagrams; and (3) drawing conclusions through comparative analysis and conceptual framework construction. The validity of the data was ensured through triangulation of sources (documents, literature, and practical observations) and peer review by Arabic language education and learning technology experts.

RESULTS AND DISCUSSION

1. Learning Administration Planning MOOCs: A Systematic Foundation

Planning is the most critical stage in the administration cycle of MOOC-based learning. In contrast to conventional learning planning, which is linear and temporal, MOOC planning is non-linear, modular, and learning path-oriented, and can be customized according to the individual needs of students (Fassbinder & Barbosa, 2021). Dick, Carey, and Carey (2015) emphasized that effective learning planning must begin with a comprehensive needs assessment, including the analysis of learning objectives, student characteristics, and the context of the learning environment (Davies, 2020).

In the context of Nahwu and Sharaf courses, the administrative planning of MOOCs must consider several specific dimensions. First, the taxonomy of learning objectives reflects the scientific

hierarchy of the Arabic language: from mastery of basic rules (*al-qawa'id al-asasiyyah*) to the ability to grammatically analyze complex texts (Isnaini, 2022). Second, mapping the material that integrates the classical science of nahwu (as systematized in the books of Alfiyah Ibn Malik and *al-Ajurrumiyyah*) with the context of the use of contemporary Arabic (H Nour & Muttaqin, 2025). Third, assessment design should be able to measure grammatical competence authentically, not just by memorizing rules (Iwashita, 2018).

Conole (2013) in his study on designing quality MOOCs developed the "7Cs of Learning Design Framework" which includes: Conceptualize, Capture, Communicate, Collaborate, Consider, Combine, and Consolidate. The framework provides systematic guidance for MOOCs developers to design coherent and meaningful learning experiences. In its application to Nahwu and Sharaf, the "Capture" dimension refers to the process of digitizing rich Arabic grammatical content, including tashrif tables, i'rab diagrams, and example sentences from the Qur'an, into an interactive, engaging, multimedia format (Nujaima & Kurniawan, 2024).

A comparative study of several learning scenarios of the Nahwu and Sharaf MOOCs shows a planning pattern that can be categorized into four main components: (a) learning outcomes mapping based on the Indonesian National Qualifications Framework (KKNI) and aligned with international Arabic language competency standards; (b) the structure of the learning module consisting of 8-16 units with a duration of 2-4 hours per unit; (c) integration of

multimedia resources that include a minimum of three types of media per learning unit; and (d) the design of a continuous assessment system consisting of formative quizzes, project assignments, and online summative exams(Zulkifli et al., 2020).

Accessibility and inclusive design are critical aspects of administrative planning that are often overlooked. Burgstahler (2015) emphasized the importance of Universal Design for Learning (UDL) in the design of online courses, which ensures that students of different conditions and backgrounds can access and participate fully in learning. In the context of the Nahwu and Sharaf MOOCs in Indonesia, this includes consideration of the limitations of digital infrastructure in certain areas, the variety of access devices (desktop vs. mobile), and the needs of students who may have certain limitations(Burgstahler, 2023).

2. Implementation of Online Learning Administration: Integration of Technology and Pedagogy

The implementation of MOOC-based learning administration in Nahwu and Sharaf courses shows a complex integration between content management, facilitation of learning, and digital interaction management. The LMS systems used, both proprietary platforms such as Coursera and open-source platforms such as Moodle, function as administrative hubs that unify all learning components into one integrated digital ecosystem(Isnaini, 2022).

In the content management dimension, the implementation of the administration of the Nahwu and Sharaf MOOCs shows a diverse and structured pattern of multimedia usage. Animated

videographs for the visualization of grammatical rules, such as the animation of the i'rab process or the diagram of Arabic sentence structure, have proven effective in helping students understand the abstract concepts of grammar(Roji, 2025). This research on the use of video in language learning shows that videos that combine auditory narration with graphical visualization (dual coding) significantly improve material retention compared to static text(Liu, 2024). These findings are in line with the Cognitive Theory of Multimedia Learning (CTML) developed by Mayer (2009), which asserts that humans learn more effectively when information is presented through a combination of words and images simultaneously(Mayer, 2024).

The audio podcast component in the MOOCs scenario of Nahwu and Sharaf has a typical administrative function: in addition to delivering learning content, podcasts serve as a means of auditory training (istima') for the correct pronunciation of Arabic vocabulary and sentences(Alemsyah et al., 2026). In other study on the use of podcasts in language learning, found that on-demand podcast access increases learner autonomy and allows students to carry out differentiated learning according to their respective learning rhythms(Ramirez, 2024). In an administrative context, the availability of podcasts that can be accessed at any time reduces the reliance on synchronous learning schedules, which are often a barrier for students who work or have family responsibilities.

Asynchronous discussion forums are the administrative components that most determine the quality of social interaction in MOOCs. In addition to

their function as a medium of communication, discussion forums on MOOCs platforms serve as a repository of collective knowledge that continues to grow throughout the course cycle(Yelubay, 2022). Other research has emphasized that high social presence in discussion forums, characterized by the frequency of interactions, depth of responses, and quality of arguments, is positively correlated with learning outcomes. In the context of Nahwu and Sharaf, discussion forums can be designed as a forum for (a) discussing problematic i'rab cases, (b) sharing the findings of grammatical analysis of Qur'anic texts or hadiths, and (c) building a supportive learning community between students with diverse backgrounds(Gasmi, 2022).

The implementation of gamification in the Nahwu and Sharaf MOOCs administration system also requires special attention. Hamari, Koivisto, and Sarsa (2014) found in their systematic review that gamification elements such as points, badges, leaderboards, and achievement levels significantly increased participants' intrinsic motivation and engagement in online courses. In the context of learning Nahwu and Sharaf, gamification can be designed around the milestone of mastering the rules: from the level of "Mubtadi" (beginners) who master basic rules to the level of "Mutaqaddim" (proficient) who is able to analyze i'rab complex texts(Metwally & Yining, 2017).

The monitoring and supervision aspect of the implementation of MOOCs administration utilizes extensive learning analytics technology. Siemens (2013) defines learning analytics as "the

measurement, collection, analysis, and reporting of data about learners and their contexts for the purpose of understanding and optimizing learning and the environment in which that learning occurs." The analytics dashboard provided by the MOOCs platform allows instructors to monitor the pattern of material access by students, the average time spent per module, the performance of formative quizzes, and the level of participation in discussion forums, all in real time and in aggregate(Leitner et al., 2020).

3. Learning Evaluation Management: Digital Assessment Innovation

The evaluation of learning in MOOCs represents one of the most dynamic and controversial areas of innovation in digital higher education. In contrast to conventional assessments that rely on face-to-face exams and subjective assessments by instructors, MOOCs evaluation systems integrate various assessment modalities that utilize computational intelligence to improve scalability and objectivity(Chauhan, 2014).

In the context of Nahwu and Sharaf, the MOOCs evaluation system can be categorized into four main tiers. The first tier was a multiple-choice and fill-in-the-blank formative quiz designed to directly measure the conceptual understanding of grammatical rules. This quiz utilizes Computer Adaptive Testing (CAT) technology, which automatically adjusts the difficulty level of questions based on student performance, so that each student gets an assessment experience tailored to their zone(Vie et al., 2016). The second tier is drill exercises that require students

to analyze the grammatical structure of Arabic sentences and determine the position of each word (i'rab). The third tier is a text-analysis-based project assignment in which students are asked to identify and analyze grammatical structures in Qur'anic texts, hadiths, or classical Arabic literature. The fourth tier is a comprehensive summative exam that integrates all Nahwu and Sharaf competencies.

Automated Essay Scoring (AES) and Natural Language Processing (NLP) for Arabic are the latest frontiers in Arabic MOOC assessment innovation. Other studies have reported significant advances in Arabic NLP technology, which can now perform morphological analysis (tahlil sarfi) automatically with high accuracy. However, the complexity of the Arabic language, including ambiguity of meaning, dialect variation, and stylistic nuances, remains a technical challenge that requires further development. In current practice, the evaluation systems of the Nahwu and Sharaf MOOCs generally combine automated assessments for quantifiable components (multiple choice, filling) with peer assessment and instructor review for components that require a qualitative assessment(Shaalan, 2005).

Academic integrity in online evaluations is a critical concern that cannot be ignored. Dawson (2020) in his study on academic integrity in online education found that the rate of cheating in online exams tends to be higher than in face-to-face exams, especially when there is no adequate proctoring mechanism(Kuleva & Miladinov, 2024). To overcome this, Nahwu and Sharaf's MOOCs administration system needs to

integrate various anti-cheating strategies: question randomization and answer choice, time limits, AI-based proctoring technology, and question design that emphasizes analysis and synthesis skills, which are more difficult to replicate than factual questions(Murugan et al., 2024).

Digital portfolio-based assessments are an increasingly popular evaluation method in MOOC-based language learning. Barton and Collins (1993) identified the portfolio as an assessment instrument that can document learning growth and development longitudinally, providing a more holistic picture of student competence than snapshot assessments that are punctual. In the context of Nahwu and Sharaf, the digital portfolio can include audio recordings of students reading and analyzing Arabic texts, collections of i'rab exercises that have been worked on throughout the semester, reflective journals about the learning process, and self-paced grammatical analysis projects(Baity et al., 2025).

4. Learning Documentation and Monitoring: Academic Data Infrastructure

Learning documentation in MOOCs generates volumes of academic data that far exceed the capacity of conventional administrative systems. Every student interaction with the platform, from the click of the navigation button, the duration of watching the video, the response to the quiz questions, and the content of the discussion forum post, is recorded and stored in the LMS database as digital trace data. Tucker's mapped the categories of learning data that can be generated by MOOCs systems: activity, performance, social, and demographic

data, all of which can be analyzed to produce actionable insights for learning managers(Tucker et al., 2020).

Learning analytics, a branch of science that examines the use of learning data to optimize the educational process, has developed rapidly in the last decade. Zhong identified three main categories of learning analytics applications in higher education: (1) prediction models to identify at-risk learners based on digital behavior patterns; (2) recommendation systems that suggest additional learning resources based on individual competency profiles; and (3) Discourse Analytics, which analyzes the quality and dynamics of discussions in online forums(Zhong, 2015). These three applications are directly relevant to the management of the administration of Nahwu and Sharaf MOOCs.

Monitoring attendance and participation in the context of MOOCs has a different dimension from conventional attendance. Schacter and Fagnano (1999) distinguish between "time on task" (time spent on academic assignments) and "time in seat" (physical presence), arguing that in online learning, time on task is a much more relevant indicator of engagement. The MOOCs administration system can monitor time on task through various proxies: access duration per module, login frequency, number of quizzes completed, and volume of contributions to discussion forums. The engagement profile resulting from the combination of these indicators provides a more accurate picture of the student learning process than attendance alone(Suresh Kumar & Mallikarjuna Shastry, 2018).

Privacy and data security in MOOCs documentation systems are ethical issues that are receiving increasing attention. Slade and Prinsloo (2013) raise a fundamental ethical question about the ownership of learning data: does student digital activity data belong to the institution that hosts the course, the technology platform that provides it, or the student? In the context of increasingly stringent data protection regulations, such as the GDPR in Europe and PDP regulations in Indonesia. Institutions hosting MOOCs need to ensure that their learning documentation systems comply with privacy-by-design principles and give students adequate control over their personal data(Fischer-Hübner et al., 2018).

5. Conceptual Framework: MAMA Model (Moocs Adaptive Management Administrative)

Based on a comprehensive synthesis of the research findings presented above, this study proposes a conceptual framework for MOOCs Adaptive Management Administrative (MAMA) as a model for managing digital learning administration that is integrated and responsive to the specific needs of Nahwu and Sharaf courses. The MAMA framework is built on four main pillars that interact dynamically(Isnaini, 2022).

The first pillar is Contextual Instructional Design. This pillar emphasizes the importance of designing learning administrations that consider the context of classical Islamic science while optimally utilizing digital technology capabilities(Latif R et al., 2025). Referring to the backward design principles developed by Wiggins and McTighe

(2005), the scenario design of Nahwu and Sharaf's MOOCs must start from identifying the desired learning outcomes, then designing evidence of learning success, and only then determining the most effective learning experiences and instruction to achieve these goals (Yiğ, 2022).

The second pillar is the Integrated Digital Ecosystem. This pillar refers to the need to build an administrative infrastructure for MOOCs that not only connects learning components (content, activities, assessments) but also integrates supporting systems such as library resources, student support services, and academic registries. This integration enables seamless administrative data flow and evidence-based decision-making by academic stakeholders (Kucirkova & Littleton, 2015).

The third pillar is the Adaptive Multimodal Assessment. This pillar combines various assessment modalities, from automated CAT quizzes to digital portfolios and peer assessment. One system is adaptive and responsive to the diversity of student learning profiles. This system is designed not only to measure learning outcomes (assessment of learning), but also to support the learning process itself (assessment for learning) and help students understand their own development (assessment as learning), in accordance with the assessment taxonomy developed by Earl (Al-Smadi et al., 2012; Olivier, 2021).

The fourth pillar is Continuous Learning Analytics. This pillar ensures that the data generated by the MOOCs administration system are not just accumulated in the database but are actively analyzed and utilized for the

continuous improvement of the learning process. The implementation of "closing the loop" in the learning analytics cycle, from data collection, analysis, interpretation, and intervention to evaluation of the impact of interventions, is the key to the success of the MAMA model in supporting the sustainable transformation of Nahwu and Sharaf learning (Rohloff, 2021).

The MAMA model also integrates the dimension of Islamic spirituality (al-bu'd al-ruhani), which distinguishes it from the general administrative model of MOOCs. Referring to the concept of ta'dib in Islamic education developed by Al-Attas (1979), the administration of Nahwu and Sharaf learning is inseparable from a higher goal: equipping students with the ability to read and understand the Qur'an, hadiths, and Islamic scientific treasures directly in their source language. This dimension determines pedagogical choices in each administrative component, from the selection of sentence examples from Islamic sources to the design of discussion forums that encourage reflection on the meaning and relevance of Arabic science in contemporary Islamic life (Nafa et al., 2021; Rokhim & Rusydiyah, 2021).

The findings of this study open up several important discussions that need to be considered by managers and developers of MOOC-based Nahwu and Sharaf learning. First, there is a dilemma between scalability and personalization. MOOCs are designed to serve thousands to millions of participants simultaneously, but effective Nahwu and Sharaf learning often requires intensive individualized guidance that is

responsive to each student's specific difficulties. Veletsianos and Shepherdson (2016) note that one of the most consistent criticisms of MOOCs is their failure to provide a truly personalized learning experience (Wong, 2021).

The solution that emerged from the current literature is the concept of "SPOC" (Small Private Online Courses), which combines the infrastructure of MOOCs with the limitation of the number of participants to allow for more personalized and intensive interaction (Prates, 2021). A hybrid model that integrates MOOCs for content delivery with smaller, focused face-to-face (or virtual synchronous) tutorial sessions may be a more realistic and effective approach to Nahwu and Sharaf learning in Indonesia, given the characteristics of Indonesian students' learning culture, which is generally more responsive to personal interaction with instructors (Kurniasari et al., 2018).

Second, the digital divide is a structural challenge that cannot be ignored in the implementation of Nahwu and Sharaf MOOCs in Indonesia. Data from the Central Statistics Agency (BPS, 2023) show that internet penetration in Indonesia is still uneven, with significant disparities between urban and rural areas and between the island of Java and Eastern Indonesia. In this context, the MOOCs administration model designed with stable and fast Internet access assumed will indirectly create structural barriers for students in areas with limited digital infrastructure. MOOCs administration systems need to be designed with a "low-bandwidth friendly" approach that allows access even in conditions of limited

connectivity, including providing offline access options for critical content. (Chandra et al., 2024)

Third, the digital competence of instructors is a critical prerequisite that is often overlooked in MOOC implementation. Mishra and Koehler's (2006) research on Technological Pedagogical Content Knowledge (TPACK) confirms that effective instructors in technology-based learning need to integrate three domains of knowledge: disciplinary content mastery, pedagogical knowledge, and technological competence (Voogt et al., 2012). Nahwu and Sharaf instructors who have a deep mastery of Arabic grammar may not necessarily have the ability to design and manage the effective administration of MOOCs learning. Investment in the professional development of instructors—not only in the technological aspect but also in instructional design and digital pedagogy—is an urgent need that must be addressed by organizing institutions.

Conceptually, in an implementation scenario, the Adaptive Multimodal Assessment pillar in a MOOCs-based learning system enables a more specific evaluation process by allowing the system to distinguish between different types of linguistic errors in Nahwu and Sharaf. For example, when a student analyzes the Arabic sentence " إِنَّ الطالبَ " and identifies الطالبَ as a marfu' noun marked with a dhammah ending, the adaptive system can detect a Nahwu-related error because the noun following إِنَّ should be in the manshub state (الطالب). The system then provides feedback indicating that the error occurs in the

grammatical function and sentence structure rather than in the word formation process. In contrast, in a Sharaf-related error scenario, when a student is asked to transform the verb كَتَبَ (kataba) into its present tense form but provides كَاتِبَ (kātib), which represents an ism fā'il (active participle), the system identifies that the error originates from morphological transformation, particularly in relation to word patterns (wazan) and derivational processes. Therefore, the adaptive assessment mechanism does not merely evaluate whether an answer is correct or incorrect but also classifies the underlying source of the error based on different linguistic dimensions. Subsequently, the system can provide targeted feedback and personalized remedial recommendations, such as additional sentence-structure exercises for Nahwu errors or morphological pattern practices for Sharaf errors.

CONCLUSION

This study comprehensively described and analyzed the management of MOOC-based learning administration in Nahwu and Sharaf courses through the synthesis of reputable international literature and field practice studies. Several key conclusions can be drawn from this study:

First, the administration of MOOC-based learning in Nahwu and Sharaf courses has a dimension of complexity that goes beyond merely digitizing conventional learning content. The effectiveness of this administrative system is largely determined by the quality of integration between contextual

instructional design, adaptive technological infrastructure, multimodal assessment systems, and continuous learning analytics mechanisms.

Second, the MAMA (Adaptive Administrative Management MOOCs) model proposed in this study offers a conceptual framework that integrates the principles of evidence-based learning design with classical Islamic values. This model does not simply adopt the best practices of global MOOCs but contextualizes them in the Arabic scholarly tradition and more holistic Islamic educational goals.

Third, the successful implementation of MOOC learning administration in Nahwu and Sharaf courses requires systematic handling of several critical challenges: the digital infrastructure gap, digital competence of instructors, online academic integrity issues, and the need for learning personalization that often contradicts the scalability logic of MOOCs.

Based on the above conclusions, several strategic recommendations can be submitted: (1) organizing institutions need to develop a comprehensive MOOCs development policy, including content quality standards, academic quality assurance systems, and data security protocols; (2) instructor capacity development in TPACK (Technological Pedagogical Content Knowledge) needs to be prioritized as a long-term investment in the quality of digital learning; (3) the design of the MOOC administration system must consider the principles of inclusive design and low-bandwidth accessibility to ensure equitable access for all students; and (4) further research is needed to evaluate the

effectiveness of the MAMA model through systematic empirical trials in various institutional contexts

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