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Utilization Of Learning Management Systems (Lms) And Artificial Intelligence (Ai) In Supporting Authentic Assessment In Arabic Language Learning: A Descriptive Study

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Abstrak:

Penelitian ini bertujuan untuk mendeskripsikan pemanfaatan Learning Management System (LMS) dan kecerdasan buatan (AI) dalam mendukung asesmen autentik pembelajaran bahasa Arab. Menggunakan pendekatan kualitatif deskriptif dengan desain penelitian kepustakaan, data dikumpulkan melalui penelaahan literatur dari jurnal ilmiah, buku, laporan penelitian, dan artikel akademik yang relevan. Hasil penelitian menunjukkan bahwa LMS memberikan ruang yang sistematis dan terintegrasi bagi guru dalam merancang dan melaksanakan asesmen autentik berbasis portofolio, proyek, forum diskusi, rekaman audio, dan kuis interaktif untuk menilai keterampilan istima', kalam, qirā'ah, dan kitābah secara kontekstual. Sementara itu, AI mampu memperkuat asesmen autentik melalui analisis otomatis, umpan balik instan, deteksi kesalahan bahasa, dan evaluasi adaptif menggunakan teknologi seperti Natural Language Processing (NLP) dan speech recognition. Penelitian ini juga menemukan tantangan berupa rendahnya literasi digital guru, keterbatasan infrastruktur, dan belum matangnya model AI bahasa Arab. Meski demikian, integrasi LMS dan AI menghadirkan peluang besar untuk mengembangkan asesmen bahasa Arab yang lebih efektif, personal, dan relevan di era digital. Studi ini memberikan implikasi penting bagi pengembangan pembelajaran bahasa Arab serta mendorong penelitian lanjutan yang lebih empiris.

Kata Kunci: Learning Management System, Kecerdasan Buatan, Asesmen Autentik, Pembelajaran Bahasa Arab.

Abstrack:

This study aims to describe the utilization of Learning Management Systems (LMS) and Artificial Intelligence (AI) in supporting authentic assessment in Arabic language learning. Employing a descriptive qualitative approach with a library research design, data were collected through an extensive review of scholarly journals, books, research reports, and academic articles. The findings indicate that LMS provides a systematic and integrated digital environment for teachers to design and implement authentic assessments through portfolios, projects, discussion forums, audio submissions, and interactive quizzes, allowing for contextual evaluation of listening, speaking, reading, and writing skills. Meanwhile, AI enhances authentic assessment by offering automated analysis, instant feedback, error detection, and adaptive evaluation through technologies such as Natural Language Processing (NLP) and speech recognition. The study also identifies several challenges, including limited digital literacy among teachers, inadequate technological infrastructure, and the underdevelopment of Arabic-language AI models. Despite these challenges, the integration of LMS and AI offers significant opportunities to develop more effective, personalized, and contextually relevant assessment models in Arabic language education. This research provides meaningful implications for Arabic language pedagogy and encourages further empirical studies.

Keywords: Learning Management System, Artificial Intelligence, Authentic Assessment, Arabic Language Learning.

INTRODUCTION

Arabic language learning in the digital era faces significant challenges and opportunities, particularly in adapting technology to enhance the effectiveness of instruction and assessment (Amadi & Sholikha, 2023). The integration of Learning Management Systems (LMS) and Artificial Intelligence (AI) offers great potential for designing more comprehensive and adaptive authentic assessments, especially in evaluating the competencies of non-native Arabic learners (Ismail et al., 2023). This study aims to analyze how the utilization of these technologies can optimize assessment processes that are not only valid and reliable but also capable of reflecting learners' practical abilities across various linguistic contexts (Zuhri et al., 2024). This approach has the potential to improve student learning outcomes, aligning with the needs of Arabic language education in the era of technological disruption (Ghofur & Riski, 2024). The digital transformation has fundamentally changed teaching methods and access to information, necessitating a systematic examination of the development of Arabic language education in this era (Amadi & Sholikha, 2023).

This study specifically explores the use of AI in Arabic language learning research, including its intensity of use, the types of platforms utilized, and user acceptance of those AI-based platforms (Anwar & Mufidah, 2024). In the context of Society 5.0, the use of artificial intelligence in Arabic language education is increasingly relevant for creating adaptive and interactive learning experiences tailored to individual student needs (Anwar & Ahyarudin, 2023). Moreover, AI literacy has become a crucial aspect that must be mastered by teachers, students, and parents to optimize the potential of generative AI platforms such as ChatGPT in creating personalized learning experiences and interactive materials (Simon, 2023). This research also discusses digital-based learning material development, educational applications and platforms for Arabic learning, and the effectiveness of technology-supported instructional methods (Amadi & Sholikha, 2023). These findings align with previous research indicating that digitalization has broad applications in language learning and various academic disciplines (Ahmadi et al., 2024). Meanwhile, authentic assessment requires the development of evaluation instruments capable of comprehensively measuring students' cognitive and psychomotor abilities in accordance with current educational demands (Amadi & Sholikha, 2023).

Authentic assessment is a process that requires learners to demonstrate their skills and knowledge in realistic, real-life, or life-like contexts that mirror situations they may encounter beyond the classroom (Mariappan & Osman, 2023). The use of AI in authentic assessment includes natural language analysis, adaptive scoring systems, and personalized automated feedback, whereas LMS platforms provide the infrastructure needed for efficient integration and distribution of such assessments (Kurniawan et al., 2024).

Previous studies show that the use of technology in Arabic language learning continues to grow; however, gaps remain in the integration of LMS and AI, particularly in supporting authentic assessment (Omar, 2021). Fitrianto (2024) highlights the use of AI for personalized learning, while Mursyid (2024) develops technology-based evaluation models that remain limited to automated scoring. Albantani (2025) proposes a deep learning–based framework and emphasizes the significance of authentic assessment, yet concrete implementation within LMS platforms is still lacking. Anggara (2025), through a literature review, confirms that the use of LMS and AI is still fragmented, whereas other studies on automatic assessment demonstrate AI's capability to detect Arabic linguistic errors, though integration within learning platforms remains unsystematic. Based on these gaps, this study offers a novelty in the form of an integrative mapping of LMS and AI in the implementation of authentic assessment for Arabic language learning, complete with workflow, rubric usage, and responses from teachers and learners a descriptive study that has not been widely conducted within the Indonesian Arabic language education context.

LITERATURE REVIEW

The Concept of Learning Management Systems (LMS) in Education

A Learning Management System is defined as a digital platform designed to facilitate the administration, documentation, tracking, reporting, and delivery of educational content (Wahyudanti et al., 2023). A Learning Management System (LMS) is a web-based software application or technology used to plan, implement, and evaluate online or blended learning processes (Rekha, 2024). In the context of digital learning management, LMS serves as the backbone that integrates various activities related to planning, implementing, and evaluating technology-enhanced learning (Faruq et al., 2023). This system enables instructors to upload materials, organize activities, and monitor student participation, thereby supporting a structured and organized learning environment (Oke et al., 2023).

LMS also offers features such as learning path management, student progress monitoring, and digital content provision, with some systems focusing on content management

or skills management to create comprehensive learner profiles (Neji et al., 2023). Research shows that using LMS platforms—such as the web-based application *arabi.id*—can significantly influence students' Arabic language skill development (Ismail et al., 2023). Similarly, platforms such as Padlet have proven to be highly suitable for Arabic language learning in higher education due to their comprehensive features supporting preparation, learning processes, and evaluation (Budiarti et al., 2022).

Ellis defines LMS as a software application for the administration, documentation, tracking, reporting, and delivery of online learning or training programs (Gazali & Saefuloh, 2019). LMS facilitates content management, user registration, progress tracking, and result reporting, all of which are essential for supporting a comprehensive and efficient learning environment (Wiragunawan, 2022). The development of LMS must be designed to meet the needs of administration, documentation, validation, and reporting of learning activities, including distance learning and instructional module management (Hardika, 2021).

The Role of Artificial Intelligence (AI) in Education

Artificial Intelligence (AI) is a technology that enables machines to perform cognitive processes similar to humans, such as pattern recognition, data analysis, prediction, and autonomous decision-making (Zahidin et al., 2024). In the field of education, AI emerges as an important innovation that transforms teaching and learning into processes that are more adaptive, efficient, and personalized (Ng et al., 2021). AI can analyze learners' abilities, recommend materials based on individual needs, provide real-time feedback, and personalize learning pathways (Chetry, 2024). Additionally, AI helps reduce teachers' administrative workload by automating assessment, detecting plagiarism, analyzing learning engagement, and processing assessment results.

The presence of technologies such as intelligent tutoring systems, learning analytics, speech recognition, and natural language processing makes learning more inclusive, especially for learners with varying learning speeds (Togni, 2025). Thus, AI not only enhances pedagogical effectiveness but also expands access to education, ensuring that each learner receives a more targeted and sustainable learning experience.

Authentic Assessment in Arabic Language Learning

Authentic assessment is a form of evaluation that measures learners' abilities through tasks that reflect real-world situations, requiring the contextual and meaningful application of language skills (Taufina & Chandra, 2018). In Arabic language learning, authentic assessment is essential because the language is not merely studied as a system of symbols but as a real communicative tool connected to culture, social context, and specific communicative goals

(Nirman et al., 2025). Through authentic assessment, teachers evaluate learners' listening (istima'), speaking (kalam), reading (qirā'ah), and writing (kitābah) skills through relevant activities such as dialogues, presentations, text creation, video projects, or interpretation of Arabic texts (Nirman et al., 2025).

Such assessments encourage students to use the language creatively, communicatively, and practically, while also allowing teachers to observe students' thinking processes and linguistic strategies (Amadi & Sholikha, 2023). Authentic assessment is both formative and reflective, providing feedback that helps learners understand their strengths and weaknesses in real language-use contexts (Mariappan & Osman, 2023; Nirman et al., 2025). Thus, authentic assessment plays a vital role in enhancing communicative competence and building a holistic, contextual, and practice-oriented Arabic language learning experience.

RESEARCH METHOD

This study employs a descriptive qualitative approach with a focus on conceptual and theoretical analysis to systematically describe the utilization of Learning Management Systems (LMS) and Artificial Intelligence (AI) in supporting authentic assessment in Arabic language learning based on relevant scholarly sources (Anwar & Mufidah, 2024). The research design used is library research, which relies on the examination of books, scientific journals, research reports, academic articles, and other scholarly sources discussing LMS, AI in education, and authentic assessment. This approach is used to construct a comprehensive and in-depth theoretical overview of the topic under investigation.

Data were analyzed using content analysis techniques through several stages, including identifying key concepts related to LMS, AI, and authentic assessment; classifying literature according to the focus of the study; synthesizing theories to identify interconceptual relationships; and interpreting findings to generate deeper understanding and identify gaps (novelty) within the research (Raup et al., 2022).

RESULTS AND DISCUSSION

Utilization of LMS in Authentic Assessment for Arabic Language Learning

The use of Learning Management Systems (LMS) in authentic assessment for Arabic language learning provides an integrated platform for managing various forms of evaluation that reflect real-world contexts, such as portfolio-based projects, simulations, and case studies. LMS facilitates the systematic collection and storage of students' learning evidence, enabling progress tracking and providing structured and continuous feedback (Indahnur & Nur, 2024).

Collaborative features in LMS platforms such as discussion forums and wikis support project-based assessment by encouraging interaction among learners and the development of Arabic language skills within social contexts (Albantani et al., 2020). For example, LMS platforms like *arabi.id* have been developed to integrate Arabic language materials and assessments, contrasting with systems that rely solely on written testing (Ismail et al., 2023). These features allow teachers to design more dynamic and interactive assessments, shifting the focus from passive memorization to active application of Arabic in varied scenarios (Ahmadi, 2020; Amadi & Sholikha, 2023).

The use of LMS also simplifies the implementation of continuous formative assessment through interactive quizzes, essay assignments, or voice recordings for evaluating speaking skills all of which can be efficiently managed and assessed within a single integrated system (Oke et al., 2023). Previous studies also show that AI-based learning platforms such as Quizizz can optimize the creation of Arabic language learning tools through adaptive features like automatic difficulty adjustment and analysis of learning outcomes (Sunarko et al., 2025).

Overall, LMS plays a strategic role in supporting the implementation of authentic assessments in Arabic language learning. Platforms such as Moodle, Google Classroom, or local madrasah systems provide spaces that allow instructors to design assessments that measure students' productive and receptive skills more comprehensively (Omar, 2021). Through features such as assignments, audio uploads, discussion forums, and context-based quizzes, LMS enables teachers to assess istima' (listening), kalam (speaking), qirā'ah (reading), and kitābah (writing) in more natural and real-world contexts (Fauzi & Anindiati, 2021). Moreover, LMS capabilities for tracking individual progress and providing automated feedback facilitate adaptive and personalized learning processes, enabling learners to address weaknesses and build upon their strengths (Kaukab, 2021).

In speaking assessments, for example, LMS supports tasks involving the upload of recorded dialogues or monologues in Arabic (Alkaabi & Almaamari, 2025). For writing skills, LMS provides space for students to submit narrative, descriptive, or argumentative texts, which can then be assessed gradually by teachers (Budiarti et al., 2022). Discussion forums within LMS have also proven effective for measuring students' ability to use Arabic in communicative interactions, resulting in assessments that are more authentic, contextual, and process-oriented (Fauzi & Anindiati, 2021). Furthermore, LMS enables continuous monitoring of student progress through well-documented formative assessments (Fauzi & Anindiati, 2021). Systematically stored learning data make it easier for teachers to conduct evidence-based assessments, demonstrating that LMS functions not only as a task submission platform but also

as a tool that strengthens authentic assessment in structured and measurable ways (Supiani et al., 2024).

The Role of AI in Supporting Authentic Assessment in Arabic Language Learning

Artificial intelligence offers significant potential in automating and enhancing various aspects of authentic assessment, particularly in providing in-depth analysis and adaptive feedback (Zain, 2024). For example, AI-based tools can analyze students' oral and written responses in Arabic, delivering instant feedback on fluency, accuracy, and linguistic complexity, as well as identifying recurring error patterns for targeted instructional interventions.

AI technology is capable of evaluating student progress in real-time and adjusting the difficulty level of tasks or materials to match individual needs, ultimately boosting student motivation and engagement (Rachmawati, 2024). Literature reviews reveal that AI increasingly plays a role in optimizing authentic assessment, especially in Arabic language learning (Alkaabi & Almaamari, 2025). AI offers algorithm-based analyses that can assess students' language performance quickly, accurately, and data-driven (Sari et al., 2025).

The use of Natural Language Processing (NLP) for Arabic enables AI to analyze phonological, morphological, syntactic, and semantic aspects tasks that would previously require substantial time if done manually by teachers (Shao et al., 2022). In speaking assessments, Arabic speech-recognition technology can provide immediate feedback on correct articulation (makhraj), intonation, and fluency. For writing skills, AI can correct spelling (imlā'), sentence structure, and vocabulary usage. Language models can even offer direct suggestions for text improvement, enhancing the quality of assessment by providing instant, personalized feedback to learners (Bulut & Beiting-Parrish, 2024).

Moreover, AI supports authentic assessment by generating contextual task scenarios such as dialogues, case studies, or simulations based on real-life situations (Hariyanto et al., 2025). AI-based systems can adjust task difficulty according to student ability, resulting in adaptive assessment (Alamsyah & Neal, 2025). In the context of Arabic language learning, this is especially relevant because differences in student competency levels are often clearly visible across the four major language skills (maharah).

Thus, AI not only accelerates the assessment process but also improves the quality and personalization of authentic assessment while helping teachers identify learners' weaknesses more precisely.

Challenges and Opportunities in Integrating LMS and AI

Despite the vast potential of integrating LMS and AI, several challenges require careful consideration. The first challenge lies in teachers' digital literacy. Not all Arabic language teachers possess sufficient technical skills to utilize LMS optimally, let alone integrate it with AI technologies. As a result, LMS is often used merely as a platform for submitting assignments rather than a feature-rich environment for authentic assessment (Aaron & Mahamod, 2025).

The second challenge concerns the availability of devices and internet access. Many educational institutions, particularly madrasahs in rural areas, lack adequate infrastructure for the effective implementation of AI and LMS. For example, Arabic speech-recognition technology requires stable connections and compatible devices (Salim & Aditya, 2025). Additionally, the development of Arabic learning content that aligns with AI and LMS platforms, as well as the validity and reliability of AI-based assessment tools, remains an area that demands further research to ensure effectiveness and accuracy (Aaron & Mahamod, 2025; et al., n.d.).

The third challenge involves the limitations of Arabic AI models, which are not yet as comprehensive as models for languages such as English. NLP analysis for Arabic continues to grapple with complex morphological structures and wide dialectal variations, necessitating further advancements for improved accuracy (Zarkani et al., 2025).

However, despite these challenges, the literature also highlights promising opportunities for developing authentic assessment. First, LMS–AI integration allows teachers to conduct digital portfolio assessments enriched with diverse learning evidence (Alotaibi, 2024). Second, the rapid development of Arabic-language AI models is expected to support more accurate assessments in the coming years (Oktavianus et al., 2023). Third, Indonesia's educational digitalization policies provide a strong foundation for building a more mature digital learning ecosystem in madrasahs and Islamic educational institutions (Auliya et al., 2025).

Implications of the Findings

Based on the findings, the integration of LMS and AI carries significant implications for Arabic language learning (Hastuti & Hartono, 2025).

First, teachers are required to enhance their digital competence to utilize LMS and AI not merely as supporting tools but as essential components of authentic assessment (Ghofur & Riski, 2024).

Second, educational institutions need to provide infrastructural support and continuous training to ensure that technological implementation does not remain at a basic level (Xia et al., 2024).

Third, this study opens opportunities for developing new assessment models that are more adaptive, personalized, and contextual to the specific characteristics of Arabic language learning (Daud et al., 2025). Teachers and researchers can use these findings to design more effective technology-based authentic assessment instruments that align with learners' needs.

Fourth, the results of this study contribute theoretically to the expanding literature on Arabic language education in the digital era, serving as a foundation for future research on the actual application of LMS and AI in diverse educational settings (Garba & Hassan, 2024).

Further research may explore the effectiveness of AI in providing personalized and adaptive feedback that takes into account cultural sensitivities and linguistic nuances in Arabic learning (Maulidi, 2025). Future studies may also investigate the long-term impact of these systems, their adaptability across various learning environments, and potential improvements to further optimize language learning outcomes (Ismail et al., 2023).

CONCLUSION

This study concludes that the utilization of Learning Management Systems (LMS) and Artificial Intelligence (AI) plays a significant role in supporting authentic assessment in Arabic language learning. LMS functions as an integrated platform that facilitates the systematic and evidence-based design, implementation, and tracking of authentic assessments. Features such as discussion forums, audio-upload tasks, interactive quizzes, and digital portfolios enable teachers to evaluate students' listening (istima'), speaking (kalam), reading (qirā'ah), and writing (kitābah) competencies more naturally and contextually.

Meanwhile, AI contributes by providing automated analysis, instant feedback, and adaptive evaluation that help identify learners' strengths and weaknesses more accurately. The integration of these two technologies creates substantial opportunities for developing assessments that are more effective, personalized, and relevant to the needs of contemporary Arabic language learning.

Nevertheless, the study also identifies challenges such as limited digital literacy among teachers, unequal technological infrastructure, and the suboptimal performance of existing Arabic AI models. These findings indicate the need for comprehensive efforts to strengthen educators' competencies and institutional readiness in implementing LMS- and AI-based learning.

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