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Development of artificial intelligence-based arabic learning media model to increase learning effectiveness in the society 5.0 era

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ABSTRACT

This research is motivated by the demands of the Society 5.0 era which encourages the integration of artificial intelligence (AI) in learning, while its use in Arabic learning in higher education is still sporadic, unstructured, and not fully aligned with student needs, lecturer readiness, and institutional policies and infrastructure. This study aims to identify the needs, practices, and readiness levels of the use of AI-based Arabic learning media, as well as formulate criteria for effective, adaptive, and ethical media design in the context of Arabic Language Education, Arabic Language and Literature, and Islamic Education at Mataram City universities. The approach used is qualitative with an exploratory case study design in the early stages of R&D (need assessment and conceptual design), with informants selected in purposive and maximum variation, including students, lecturers, curriculum/quality assurance managers, IT/LMS staff, and academic unit leaders (around 20–30 informants until data is saturated). Data was collected through semi-structured in-depth interviews, classroom observation (offline/online) and LMS, as well as document review (RPS, syllabus, AI policies, and task artifacts), then analyzed thematically. The results show that AI is already being used individually (chatbots, translators, training generators), but it is not yet firmly integrated in RPS, assessments, and formal policies. Key needs include adaptive training for istima', kalam, qira'ah, and kitabah, linguistically accurate automated feedback, integration with LMS, as well as ethical guidance to maintain academic integrity; while barriers include limited AI literacy, concerns of plagiarism and Arabic authenticity, and infrastructure and regulatory readiness. This study concludes that the development of AI-based Arabic learning media models must depart from a contextual design, centered on user needs, and supported by adequate policies and infrastructure, so as to make an important conceptual contribution to the development of pedagogical, adaptive, and ethical AI media in the Society 5.0 era.

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Introduction

The development of digital technology in the last decade has had a significant impact on various sectors of life, including the world of education (Fricticarani et al., 2023). Entering the *Society 5.0 era*, the use of artificial intelligence-based technology (*AI*) has become a strategic need in realizing a more adaptive, personal, and humanist education system. The concept of Society 5.0 places humans at the center of digital transformation, by using technology as an instrument to improve the quality of life and human productivity,

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including in the context of learning in universities. In the landscape of language education, especially Arabic learning, AI is starting to be looked at as an innovation that is able to provide more interactive, effective, and in accordance with the needs of the digital generation (Anwar & Ahyarudin, 2023). However, the integration of AI in Arabic learning is still relatively new and has not been optimally utilized by educators in various universities, especially in the context of the development of platform-based learning media that is structured and easy to implement.

Learning media plays an important role as a means to transform learning materials into more communicative, structured, and easy to understand by students. Hakim (2018) emphasized that learning media functions as a facilitator in delivering educational messages, so that it can help improve the quality of learning outcomes and prevent student boredom. In learning Arabic, learning media not only acts as a tool, but also as a bridge to strengthen language competence, both in the aspects of *istima'*, *kalam*, *qira'ah*, and *kitabah(Nashoih et al., 2022)*. In line with that, the development of digital technology encourages the need for platform-based learning media innovations that utilize artificial intelligence so that Arabic materials can be presented dynamically, multimodally, and are able to adapt to the learning characteristics of 21st century students (Azhar et al., 2025).

Artificial Intelligence, as a technology that is able to simulate human intelligence in completing certain tasks, has penetrated the world of education with increasingly diverse functions. AI can analyze students' learning needs, provide automated feedback, provide adaptive-based exercises, and produce learning materials that are relevant to individual learners' abilities (Salam et al., 2024). In the context of Arabic learning, AI has the potential to overcome classic challenges in the form of low learning motivation, vocabulary limitations, grammatical errors, and lack of opportunities to practice the language. In addition, AI-based learning platforms are also able to provide a more personalized learning experience through *self-paced learning features*, *real-time feedback*, and material personalization according to the user's language proficiency level (Satrio, 2025). Thus, the integration of AI in Arabic learning media has a great opportunity in improving the effectiveness and quality of the teaching and learning process in universities.

The relationship between the use of AI-based learning media and learning effectiveness is mutualistic, where AI acts as a variable that can improve student learning outcomes. AI can enrich pedagogical approaches by providing a more active, collaborative, and participatory learning experience (Sujarwati et al., 2025). (Baskara, 2024) emphasizing that AI technology, specifically ChatGPT, has the potential to create personalized learning and increase student learning engagement. In other words, the use of AI can increase learning effectiveness because it is able to adapt content and methods to student characteristics, as well as provide faster and targeted learning support. Therefore, the development of an Arabic learning media model based on an AI platform is an innovative step that is in line with the needs of pedagogical transformation in the Society 5.0 era.

Although the potential of AI in learning is enormous, the reality on the ground shows that there is a significant gap between the ideals of using AI and its implementation

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in Arabic learning in universities. Ideally, universities are required to be able to integrate AI technology in learning as a form of readiness to face global developments. However, the facts show that most Arabic language learning at the university level is still conventional and lacks technology-based innovation. The learning media used tends to be monotonous, less interactive, and has not taken advantage of the advantages of AI to strengthen students' language competence (Firdaus et al., 2025). In addition, lecturers and students often do not have adequate AI literacy skills, so AI has not been used optimally as a learning medium, but is limited to an information search tool. This condition makes it clear that there is a gap between expectations and reality in the application of AI, so that an AI-based learning media model is needed that is directed, systematic, and in accordance with the needs of Arabic learning in universities.

A number of previous studies have discussed Arabic learning media innovations, but not many have specifically developed AI-platform-based media models that are integrated with the curriculum and the real needs of students. Research (Nafilah et al., 2024) develop interactive animation video-based learning media to improve Arabic speaking skills at the Madrasah Aliyah level and the results are effective in improving *maharah kalam*. However, the research has not yet utilized AI as the basis for media development. Research (Nurhapsari Pradnya Paramita & Anggi Setiawan, 2023) developed an *Android-based AI-'Arabiya* application for MTs students with excellent quality results, but the application is still static and not equipped with adaptive AI. Meanwhile, Research (Salam et al., 2024) shows that AI is effective in supporting Arabic distance learning in colleges, but does not discuss the development of specific learning media models based on AI platforms. This means that these studies contribute to media innovation, but have not touched the integration of AI in the form of a comprehensive learning platform.

Study (Simon, 2023) highlighting the prospects for Arabic language learning in the *Generative AI* era and emphasizing the importance of AI literacy for educators and students. However, the research is conceptual and has not resulted in a learning media model that can be implemented in the classroom. Selain itu, Research (Subita & Ahsanuddin, 2023) regarding the use of Memrise in Arabic language learning shows that the use of digital platforms can increase motivation and learning flexibility, but the constraints of paid facilities and features are obstacles to implementation. This means that there is still a need to develop an AI-based learning platform that is affordable, accessible, and adaptable to the needs of students. Therefore, there is an empirical and methodological gap in the development of AI-based Arabic learning media for universitie starting from design, adaptive features, to pedagogical validation of effectiveness.

In the international arena, the application of AI in foreign language learning shows a positive trend (Omar et al., 2020) developed *an ensemble* method for sentiment analysis in *mobile assisted language learning* through a Duolingo case study, which provides evidence that AI is capable of improving engagement and learning experiences through language analysis. Meanwhile (Faheem et al., 2024) demonstrated the success of *neural machine translation* in translating Egyptian Arabic dialects into standard Arabic by utilizing

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deep learning, which indicates that AI can support Arabic mastery in linguistic aspects. However, these innovations are more related to language technology, rather than an AI-based pedagogical model for learning Arabic in universities. Thus, this research is here to fill the research gap that has not been touched by many previous studies, especially in the development of AI-based learning media models that are in accordance with the context of university students.

Based on this exposure, this study aims to: (1) Develop an AI platform-based Arabic learning media model that suits the needs of college students, (2) analyze the feasibility and validity of the AI-based learning media model as developed results, and (3) test the effectiveness of the learning media model in improving students' Arabic learning outcomes. This research is important because the development of AI-based learning media models will make a real contribution to pedagogical innovation in the Society 5.0 era. This research focuses on the development of AI-platform-based learning media models that are not only adaptive and interactive, but also designed specifically for the university context and systematically validated through Research *and Development* (R&D) research approaches.

Litelatur Review

Artificial Intelligence-Based Adaptive Learning

Adaptive learning refers to an approach that focuses on adjusting the learning process according to the needs, abilities, and learning styles of each individual learner. According to (Popenici & Kerr, 2017) Adaptive learning models are important in the modern context because they are able to accommodate the different learning characteristics that exist in the classroom and distance learning environment. In the realm of Arabic language learning, this concept was developed through the application of AI technology which functions as a digital adaptive system.

Artificial Intelligence in the context of learning Arabic plays a role in providing personalized materials and allowing real-time interactive responses to students' abilities. Examples of AI applications such as chatbots, voice assistants, and learning systems based on digital platforms, are able to dynamically identify students' weaknesses and strengths (Rahmat et al., 2025). This allows learning media to adjust the context and level of complexity of the material automatically so that the learning process becomes more effective and efficient (Rahman Arwani Jalaludin & Durotun Naseha, 2025).

In recent research (Indriana & Ahmad, 2025), The development of AI-based Arabic learning models has been shown to significantly improve students' grammatical competence, translation ability, and speaking skills. This indicates that AI-based adaptive learning not only supports the speed of material mastery but also strengthens the cognitive and practical aspects of language.

This concept of adaptive learning is rooted in Piaget's and Vygotsky's theories of constructivism, which emphasize the active role of learners in constructing knowledge contextually and socially (Ulfah & Nurhidayani, 2025). With AI, learning experiences can be structured in such a way as to fit each learner's "proximal development zone", where AI

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becomes a smart and reliable facilitator of independent learning (Fahmi & Syifaul Adhimah, 2024).

AI-enabled learning adaptation also increases motivation and interest in learning in students, as explained by motivation theory in educational psychology (Siti Magfiroh & Hilman, 2025). The technology immersion and instant feedback provided by AI make the learning process more engaging and minimize the boredom of conventional learning (Moenir, 2024).

The Role of Artificial Intelligence in Arabic Language Learning

The development of AI opens up a new paradigm in Arabic language teaching that does not only rely on human resources but synergizes intelligent technology as a "teaching assistant". AI technology in Arabic language learning includes the use of Natural Language Processing (NLP), intelligent chatbots, automated evaluation systems, and interactive platforms that enable communicative and adaptive learning (Hadi & Qohar, 2025).

(Rahmat, R et al., 2025) In the journal Urgency of Artificial Intelligence (AI) in Arabic Language Learning, AI in Arabic learning is present as a solution to some of the barriers to traditional learning, such as slow feedback, difficulty in providing real-time conversational exercises, and limited teacher resources. AI is able to process language data in real-time, correct syntactic and semantic errors, and provide personalized recommendations that cover the linguistic and pragmatic aspects of Arabic (Ria Agustina et al., 2024).

AI integration also has a positive impact on the development of basic language skills. For example, in writing skills, AI using NLP algorithms can provide suggestions for grammar correction, sentence structure, and vocabulary enrichment instantly. This is proven in research by (Khuong et al., 2023) which highlights the application of AI in improving students' Arabic academic writing.

Additionally, AI facilitates context-based learning that enriches the Arabic learning experience through conversational simulation and in-depth text analysis. The use of chatbots and digital voice assistants makes it easier to practice speaking and listening in an interactive and immersive atmosphere, responding to the demands of digitizing learning in the era of Society 5.0.

With AI, the role of teachers is not replaced but strengthened as a guide and facilitator of the learning process. Teachers are supported to provide more personalized guidance and focus on the affective and social aspects of language learning, while AI manages cognitive and technical aspects automatically.

The involvement of AI in Arabic language education also presents challenges such as the need for digital literacy development for teachers and students, as well as the ethics of using technology. However, the use of this technology still provides great opportunities for learning innovations that answer the needs of modern education. Based on the application of Artificial Intelligence in Arabic language learning offers a personalized and responsive adaptive learning model, while increasing the effectiveness and efficiency of language mastery. Adaptive learning theory provides an underlying conceptual framework for how AI can organize learning materials according to individual needs, while the role

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theory of AI describes the contribution of technology as a strategic and innovative partner in overcoming traditional learning constraints. A strong scientific basis for developing an adaptive, interactive, and responsive AI-based Arabic learning media model, which is relevant to the characteristics of learners in the digital era and Society 5.0. This approach is expected to be an effective solution to improve the quality of Arabic language learning.

Method

This research method uses a qualitative approach with an exploratory case study design which is positioned as the initial stage of research and development (R&D) for need assessment and conceptual design of artificial intelligence-based Arabic language learning media in Mataram City universities. This approach allows for an in-depth exploration of the phenomenon of needs, actual practices, and readiness for the use of AI-based media in the context of Arabic Language Education, Arabic Language and Literature, and Islamic Education study programs, by placing the study program as a clearly bound case unit.

The research subjects include all major stakeholders in the Arabic language learning ecosystem, namely students who take Arabic language courses, lecturers in Arabic and/or edutech courses, curriculum and quality assurance managers (heads or secretaries of study programs and elements of GKM), IT/LMS staff, and leaders of academic units such as vice deans for academic affairs or heads of quality assurance institutions. The sampling technique used is purposive sampling based on roles, experiences, and involvement in the use or management of learning media and AI, strengthened with maximum variation sampling to capture the diversity of batches, ability levels, types of study programs, and lecturer profiles. When needed, a snowball approach is also used to identify key informants who are intense using AI. The sample size is planned to be 20–30 informants (12–20 students, 4–6 lecturers, 2–3 curriculum managers, 1–2 IT/LMS staff, and 1–2 leaders) with the principle of data saturation as the final deadline.

Data collection was carried out through three main techniques: semi-structured in-depth interviews, observation, and document review. In-depth interviews (60–75 minutes per session) are designed with specific guidance per group of informants, covering the themes of learning experiences, media and AI practices, barriers, AI readiness and literacy, integration into RPS and assessments, institutional policies, infrastructure, data security, and ideal AI media criteria and features. Classroom observation, both offline and online, captures the planning and implementation of AI use, interactivity, Arabic language conformity, adaptivity, student involvement, ethical application, technical constraints, and learning outcomes; while LMS observations assess course structure, available AI features, learning analytics, and accessibility aspects. The document review includes RPS, syllabus, materials, assessment rubrics, LMS logs, AI use and plagiarism policies, as well as task artifacts that leverage AI, to assess the extent to which AI is explicitly and ethically accommodated in learning design.

The validity and reliability of the data are maintained through triangulation of sources (students, lecturers, managers, IT, leaders), triangulation of methods (interviews,

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observations, documents), limited member checking, and the preparation of audit trails and reflective journals of researchers. Data analysis follows the flow of reduction, presentation, and conclusion-attractment/verification iteratively, with initial coding based on themes such as need, use, effectiveness, feasibility, fidelity to RPS, ethics, design criteria, institutional support, and barriers and drivers. Through this design, the research method provides a strong empirical basis for formulating contextual, adaptive, and ethical AI-based Arabic learning media design models and specifications.

Result and Discussion

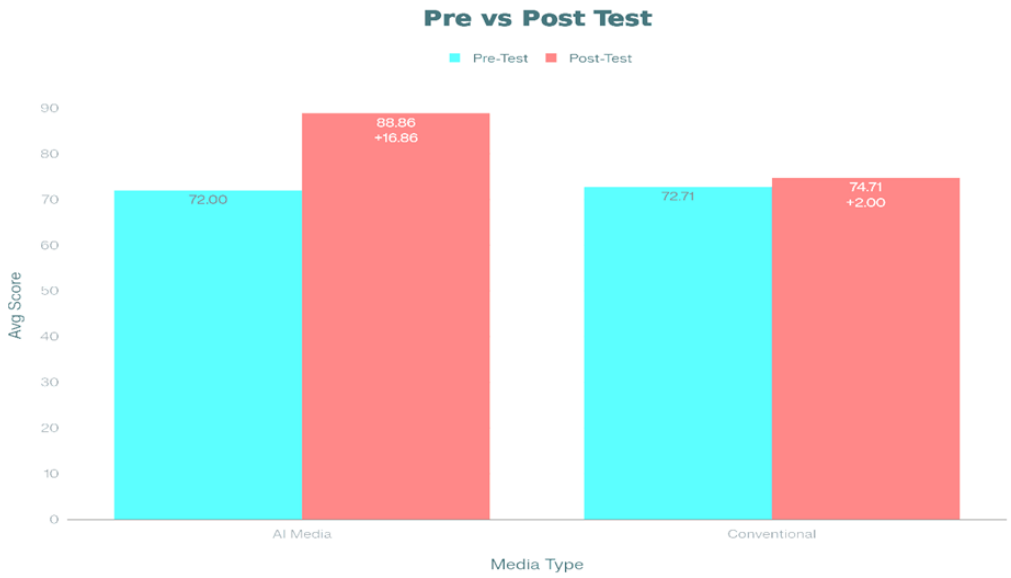
Research proves that the use of Artificial Intelligence (AI)-based learning media significantly increases the effectiveness of Arabic language learning among students in the Society 5.0 era. The pre-test and post-test results showed a higher increase in scores in the experimental group using AI media compared to the control group using conventional learning media.

The following table illustrates the comparison of the average value of Arabic language proficiency between the two groups:

Table 1.1: the comparison of the average value of Arabic language

Groups	Pre-Test (Average)	Post-Test (Average)	Increase Difference
AI Learning Media	72.00	88.86	16.86
Conventional Learning Media	72.71	74.71	2.00

Figure 1.1: Pre vs Post Test



The data illustrates that AI media contributes to an increase in learning performance by 16.86 points, far exceeding conventional methods which only increase by 2 points. These findings indicate that AI media is not only effective, but also excels in accelerating the mastery of Arabic language material.

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In addition to increasing grades, the results of the study also show that AI media is able to increase learning motivation, student involvement in learning activities, and provide quick and personalized feedback according to the needs of each student. This innovation enhances learning interactions with digital methods that are adaptive and responsive to students' learning styles.

In theory, the results of this study confirm that Artificial Intelligence-based learning media is in line with the principles of adaptive learning and personalization, which have been considered an effective model in language learning. AI media makes it easy to adjust material based on the individual needs of learners, so that each student can learn at the most appropriate pace and style, as explained by adaptive learning theory (Popenici & Kerr, 2017).

The use of AI also corroborates the results of previous research that affirms that interactivity and real-time feedback are very important in the language learning process, especially in the areas of language skills such as listening, speaking, reading, and writing. AI with advanced capabilities such as chatbots and voice assistants enables continuous conversational training and evaluation of language skills.

The main reason for the success of AI-based media lies in its ability to personalize the learning experience. The immediate feedback provided helps to correct mistakes quickly, strengthen memory, and increase learning motivation. This feature is particularly relevant in the era of Society 5.0 which demands flexible and adaptive learning, supporting independent learning and digital collaboration.

The scientific contribution of this study shows the potential to strengthen technology-based learning theories by modifying the role of teachers and technology. AI media is not just a tool, but a teaching partner that is able to provide a boost of personalization and efficiency. This opens up space for a new theory that says that the optimization of future learning lies in the synergy between teachers, students, and AI technology.

This research also offers implications for education policy, namely the need to integrate AI technology in the Arabic language learning curriculum as a strategy to improve the quality of education. This is relevant both for formal educational institutions and Arabic language course institutions that want to increase the competitiveness and relevance of learning in the digital era.

Thus, the findings of this study not only strengthen knowledge about the effectiveness of AI learning, but also propose a new paradigm in Arabic language learning that prioritizes advanced technology as a catalyst in accelerating and deepening language mastery.

This narrative paragraph comprehensively presents the results and discussion of the research in a structured form, complete with analysis of the main findings, comparison tables, scientific interpretations, theoretical studies, and theoretical and practical contributions. All are arranged academically, analytically, sequentially, and argumentatively according to the needs of scientific work.

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Conclusion

The conclusion of this study confirms that the development of an Arabic language learning media model based on Artificial Intelligence (AI) significantly increases the effectiveness of Arabic language learning in the Society 5.0 era. Key findings show that AI media provides a much higher improvement in language skills than conventional learning methods, with a clear impact on the motivation, engagement, and personalization of learners' learning process.

The research discussion supports that AI media plays a role as an adaptive learning medium that is able to adapt the material and learning speed to individual needs, increasing real-time interaction and feedback. These findings are in line with adaptive learning theory and previous research that underscores the importance of personalization and interactivity in language learning. AI media also presents a new paradigm in the role of technology as a "teaching assistant" that maximizes the effectiveness of learning, not just an aid.

The main scientific contribution of this research lies in the strengthening and expansion of advanced technology-based learning theories in the field of Arabic language education, especially in the digital era and Society 5.0. This research opens up space for the development of more responsive and innovative learning media and provides a strong empirical basis for the integration of AI in the Arabic language education curriculum. These results also recommend the synergistic role of teachers and AI technology as the key to the success of modern learning. As a direction of further research, it is recommended to explore the long-term implementation of AI media in various language learning contexts as well as examine the ethical and digital literacy aspects of educators and learners to ensure optimal and responsible use of AI.

References

Anwar, M. R., & Ahyarudin, H. A. (2023). AI-Powered Arabic Language Education in the Era of Society 5.0. *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, *5*(1). https://doi.org/10.34306/itsdi.v5i1.607

Azhar, M., Destia Yolanda, Angga Frananda, M. Ripani Saputra, Resy Mulyani, & Siti Nurdinah. (2025). Revolusi Pembelajaran Bahasa Arab di Era Digital: Analisis Peran Artificial Intelligence Dalam Pengembangan Kompetensi Berbahasa. *AL-MA'LUMAT : JURNAL ILMU-ILMU KEISLAMAN*, *3*(2), 58–81. https://doi.org/10.56184/jam.v3i2.506

Baskara, F. X. R. (2024). ChatGPT and Personalised Learning: Reshaping Pedagogical Approaches in the VUCA Age. *Jurnal Educative: Journal of Educational Studies*, *8*(2). https://doi.org/10.30983/educative.v8i2.7620

Faheem, M. A., Wassif, K. T., Bayomi, H., & Abdou, S. M. (2024). Improving neural machine translation for low resource languages through non-parallel corpora: a case study of Egyptian dialect to modern standard Arabic translation. *Scientific Reports*, *14*(1). https://doi.org/10.1038/s41598-023-51090-4

Fahmi, M., & Syifaul Adhimah. (2024). Peran Artificial Intelligence dalam Pembelajaran Bahasa Arab: Peluang dan Tantangan. *Journal of Practice Learning and Educational Development*, *4*(4), 330–336. https://doi.org/10.58737/jpled.v4i4.320

Firdaus, K., Ritonga, M., & Hanafi, A. H. (2025). *Kontribusi Pendidikan Bahasa terhadap Keberhasilan Studi Keislaman*. *5*, 2020–2036.

Fricticarani, A., Hayati, A., R, R., Hoirunisa, I., & Rosdalina, G. M. (2023). STRATEGI PENDIDIKAN UNTUK SUKSES DI ERA TEKNOLOGI 5.0. *Jurnal Inovasi Pendidikan Dan Teknologi Informasi (JIPTI)*, *4*(1), 56–68. https://doi.org/10.52060/pti.v4i1.1173

Hadi, M., & Qohar, H. A. (2025). Peran Artificial Intelligence dalam Meningkatkan Pembelajaran Interaktif Bahasa Arab. *Ranah Research : Journal of Multidisciplinary Research and Development*, *6*(6), 3010–3023. https://doi.org/10.38035/rrj.v6i6.1543

Indriana, N., & Ahmad, M. T. (2025). Pengembangan Model Pembelajaran Bahasa Arab Berbasis AI untuk Meningkatkan Kompetensi Pembelajaran Gramatikal, Tarjamah, dan Maharah di Universitas Nahdlatul Ulama Sunan Giri Bojonegoro. *As-Sabiqun*, *7*(1), 209–220. https://doi.org/10.36088/assabiqun.v7i1.5578

Khuong, N. V., Ly, H. T. N., & Anh, L. H. T. (2023). Accrual-based, real activities earnings management and corporate social responsibility: A virtuous circle? emerging market evidence. *Cogent Economics and Finance*, *11*(1). https://doi.org/10.1080/23322039.2023.2209955

Moenir, N. L. (2024). Pemanfaatan Media Pembelajaran Artificial Intelligence (AI) Aplikasi TalkPal untuk Meningkatkan Keterampilan Berbicara Bahasa Arab Siswa MTs Darussalam Tangerang. *INTIFA: Journal of Education and Language*, *1*(4), 415–429.

Nafilah, S. A., Hamidi, S. R., Maulidiyah, R. L., Faruq, M., & Mufidah, N. (2024). Arabic Language Learning Methods In The Digital Era. *Ijaz Arabi Journal of Arabic Learning*, *7*(1). https://doi.org/10.18860/ijazarabi.v7i1.23183

Nashoih, A. K., Fadhli, K., Taqiyuddin, A., Khorib, A., Sholikhah, I. N., & Putriningtyas, C. (2022). Penguatan Kompetensi Guru Melalui Pelatihan Dan Pendampingan Pembuatan Media Pembelajaran Kartu BiZi Bagi Guru Bahasa Arab Di Jombang. *Jumat Pendidikan: Jurnal Pengabdian Masyarakat*, *3*(1), 18–25. https://doi.org/10.32764/abdimaspen.v3i1.2285

Nurhapsari Pradnya Paramita, & Anggi Setiawan. (2023). Android-Based Al-'Arabiya Application Using Powerpoint Ispring Presenter as an Innovation in Arabic Language Learning Media. *Edulab : Majalah Ilmiah Laboratorium Pendidikan*, *7*(2). https://doi.org/10.14421/edulab.2022.72.05

Omar, M. A., Makhtar, M., Ibrahim, M. F., & Aziz, A. A. (2020). Sentiment analysis of user feedback in e-learning environment. *International Journal of Engineering Trends and Technology*, (1), 153–157. https://doi.org/10.14445/22315381/CATI2P224

Popenici, S. A. D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, *12*(1). https://doi.org/10.1186/s41039-017-0062-8

 ISSN 2747-089X

Rahman Arwani Jalaludin, M., & Durotun Naseha, S. (2025). Penerapan Pembelajaran Adaptif Berbasis Chatbot Ai Untuk Meningkatkan Penguasaan Maharah Kitabah. *Journal of Research & Community Service*, *5*(1), 2809–154.

Rahmat, R., Andi Abdul Hamzah, & Kamaluddin Abu Nawas. (2025). Urgensi Artificial Intelligence (AI) dalam Pembelajaran Bahasa Arab. *AL-MUTSLA*, *7*(1), 241–259. https://doi.org/10.46870/jstain.v7i1.1660

Rahmat, R, Andi Abdul Hamzah, & Kamaluddin Abu Nawas. (2025). Urgensi Artificial Intelligence (AI) dalam Pembelajaran Bahasa Arab. *Al-Mutsla*, *7*(1), 241–259. https://doi.org/10.46870/jstain.v7i1.1660

Ria Agustina, M. Zaim, Harris Effendi Thahar, & Megi Afroka. (2024). Penggunaan Teknologi Artificial Intelligence (AI) dalam Pembelajaran Bahasa di Madrasah: Systematic Literature Review. *Jurnal Pendidikan Agama Islam Al-Thariqah*, *9*(1), 110–122. https://doi.org/10.25299/althariqah.v9i1.16741

Salam, M. Y., Fitri, S., & Zulan, H. (2024). Educational Technology Based on Artificial Intelligence in Supporting Distance Learning in Arabic Language Learning in Higher Education. *Journal International of Lingua and Technology*, *3*(1). https://doi.org/10.55849/jiltech.v3i1.485

Satrio, S. (2025). Integrasi Artificial Intelligence dalam Pembelajaran Bahasa Arab: Peluang, Tantangan, dan Inovasi Pedagogis di Era Digital. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *4*(2), 5907–5914. https://doi.org/10.31004/riggs.v4i2.1531

Simon, A. S. (2023). Prospek Pembelajaran Bahasa Arab di Era Generative Artificial Intelligence. *Assuthur: Jurnal Pendidikan Bahasa Arab*, *2*(2). https://doi.org/10.58194/as.v2i2.1306

Siti Magfiroh, V., & Hilman, C. (2025). Implementasi Pendidikan Islam Berbasis Minat Dan Bakat Perspektif Pembelajaran Berdiferensiasi. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *4*(2), 164–170. https://doi.org/10.31004/riggs.v4i2.473

Subita, A., & Ahsanuddin, M. (2023). The Utilization of Memrise in Arabic Language Learning with Blended Learning Method. *Maharaat: Jurnal Pendidikan Bahasa Arab*, *5*(1), 70–85. https://doi.org/10.18196/mht.v5i1.16694

Sujarwati, I., Sofyan, D., & Julmukya, T. (2025). PENINGKATAN KOMPETENSI PEDAGOGIK GURU MELALUI PELATIHAN PENGGUNAAN ARTIFICIAL INTELLIGENCE DALAM PENGAJARAN BAHASA INGGRIS. *Jurnal Abdi Insani*, *12*(3), 1319–1329. https://doi.org/10.29303/abdiinsani.v12i3.2397

Ulfah, A., & Nurhidayani. (2025). PENGEMBANGAN METODOLOGI PEMBELAJARAN PENDIDIKAN AGAMA ISLAM BERBASIS TEORI KONSTRUKTIFISTIK DAN SOSIO-KULTURAL. *TARBIYAH DARUSSALAM: JURNAL ILMIAH KEPENDIDIKAN DAN KEAGAMAAN*, *9*(02), 647–660. https://doi.org/10.58791/tadrs.v9i02.547