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THE EFFECTIVENESS OF THE USE OF AI (ARTIFICIAL INTELLIGENCE) AS A LEARNING MEDIUM IN ARABIC LANGUAGE AT SENIOR HIGH SCHOOL

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Abstract

Arabic language learning at MAN Pekalongan began to integrate Artificial Intelligence (AI) as a supporting medium in the learning process to help deliver material and increase student involvement during learning activities. This study aims to determine the use of Artificial Intelligence (AI) as a learning medium in Arabic language learning and test its influence on the learning effectiveness of grade XI students at MAN Pekalongan. This study uses a quantitative approach with a survey method. The research population consisted of all students of grade XI MAN Pekalongan. The sample was selected using a simple random sampling technique, yielding 68 students from classes XI.1 and XI.3 as respondents. Data were collected through the distribution of questionnaires and analyzed for validity, reliability, classical assumptions, and t-tests to determine the influence of AI use on learning effectiveness. The results of the study indicate that the use of AI in Arabic language learning falls into the good category and has a positive and significant influence on learning effectiveness. The t-test results showed a p-value of 0.000 < 0.05, indicating that AI had a significant effect on student learning effectiveness. Most students also respond positively to the use of AI because it helps them understand the material, increases interest in learning, and provides a more flexible learning experience. These findings suggest that AI can serve as an effective learning medium to support more interactive, flexible, and student-centered Arabic learning.

Keywords Arabic, Learning Effectiveness; Artificial Intelligence; Learning Media.

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INTRODUCTION

Based on the results of initial observations and interviews with Arabic teachers at MAN Pekalongan, Arabic learning in grade XI has begun to integrate technology as a supporting medium for the teaching and learning process. So far, learning has been carried out through the delivery of materials in the classroom combined with the use of digital media according to learning needs. The use of Artificial Intelligence (AI) is increasingly being applied, especially in learning listening skills, because it is considered capable of providing a more engaging learning experience and aligning with students' characteristics. Teachers utilize several platforms such as ChatGPT, Gemini, Canva, applications *text-to-speech*, as well as interactive quiz media to help deliver material and increase student engagement during the learning process. In addition, these developments have also encouraged innovation in media and learning resources in learning Arabic (Winner, 2023). This condition is in line with the development of 21st-century education which places technology not only as a tool, but also as a means to create more active and student-centered learning (Asrina & Sabarudin, 2023). In addition, the use of technology in Arabic learning is seen as able to create a learning experience that is more relevant to the characteristics of the digital generation and supports more adaptive and effective learning interactions (Hadi & Qohar, 2024). The findings of the latest study also show that the transformation of Arabic learning in the digital era is no longer seen as a complement to learning, but has become part of efforts to modernize language education through a more flexible and contextual learning experience (Muzakki et al., 2025). The integration of AI in Arabic learning can also reportedly provide a more interactive learning experience through the provision of feedback and more flexible learning access according to the needs of learners (Shalihah et al., 2025).

However, the implementation of Arabic learning in class XI MAN Pekalongan still faces several obstacles. The teacher revealed that the use of AI requires careful learning planning to remain in line with the Arabic language learning goals. In addition, teachers' readiness in operating various digital platforms and differences in students' access to electronic devices are challenges in their implementation. From the results of the distribution of questionnaires to 68 students in grades XI.1 and XI.3, it is known that students responded positively to the use of AI because it helped access materials more flexibly and created a more interesting learning experience. The use of AI also not only affects the cognitive aspect, but also includes affective aspects, such as increasing confidence and reducing learning anxiety, as students can learn through more fun and intelligent methods (Agustina et al., 2024). However, in certain aspects such as understanding *São Paulo, Sã* and *Shorof*, vocabulary mastery, and learning motivation, the benefits of AI are still not felt equally by all

students. Difficulties in understanding nahwu (grammar) and sharaf (morphology) are often an obstacle for students (Arsianto & Yusuf, 2025). This condition shows that learning Arabic as a foreign language still faces challenges in mastering language skills and linguistic aspects so that strategies and media that are more adaptive to the needs of students are needed (Fahmi & Adhimah, 2024). The use of appropriate learning technology is also seen as helping to increase the effectiveness of the learning process and student involvement during learning activities (Indriana & Ahmad, 2025). However, the success of technology integration still depends on the readiness of teachers, the suitability of the media with learning objectives, and the support of facilities and digital literacy in the school environment (Haq et al., 2024).

Seeing these conditions, the use of Artificial Intelligence (AI) is important to be further studied in the context of Arabic learning at MAN Pekalongan, especially in grade XI students who are used to the use of technology in daily learning activities. This condition is also in line with the characteristics of students in the age group of Generation Z who tend to be close to digital technology and are more responsive to flexible and interactive learning experiences (Yunda et al., 2025). AI allows students to gain more flexible access to learning, get feedback quickly, and support the independent learning process outside the classroom so that learning access becomes easier and adaptive to learners' needs (Rahmat et al., 2025; Chinedu & Ade-Ibijola, 2021). The use of AI can also increase the effectiveness of language learning and support teachers in developing student learning activities (Wahyudi & Khotijah, 2021). However, the use of AI in learning Arabic still needs to be accompanied by digital literacy skills so that students not only receive technological results automatically, but are able to critically review the meaning, structure of language, and the context of its use (Zega et al., 2024). In this context, AI is seen not as a substitute for the learning process, but as a learning partner that can enrich the Arabic learning experience and support learning effectiveness when used appropriately. Therefore, this study was conducted to empirically examine the effectiveness of the use of Artificial Intelligence (AI) in Arabic language learning in grade XI students of MAN Pekalongan.

Several previous studies have examined the use of Artificial Intelligence (AI) in Arabic language learning. Aidah Novianti Putri and Moh conducted the research. Abdul Kholiq Hasan showed that using Artificial Intelligence as a learning medium in the Society 5.0 era has the potential to increase learning effectiveness and students' motivation to learn. However, the research remains conceptual and has not empirically tested the effectiveness of AI implementation through direct field measurements or quantitative analysis (Aidah & Moh Abdul, 2022). This suggests that empirical

evidence on the real impact of AI use on learning outcomes is still limited. Another study conducted by Evy Nur Rohmawaty et al. (2024) revealed that AI plays an important role in creating a more interesting and communicative learning environment, expanding access to information, and helping students' understanding. However, the study uses a qualitative descriptive approach with postgraduate students as research participants, making the results difficult to generalize to secondary education and failing to specifically measure learning effectiveness quantitatively (Evy Nur Rohmawaty et al., 2024).

Furthermore, research by Supriyanto and Nur Toifah (2024), conducted using the Systematic Literature Review method, shows that AI positively contributes to increased learning effectiveness, particularly in student engagement and understanding. However, because the study used secondary data, it did not provide direct empirical evidence from classroom implementation, so it could not fully describe the practical impact of AI integration in Arabic language learning (Supriyanto & Nur, 2024). Meanwhile, research by Fatin Farhana (2024) shows that the use of learning media can significantly improve students' learning abilities. However, the study focused on the use of Animaker media and examined the skills of ḥiwār at the MTs level, so that there are differences in terms of learning media, research variables, and educational context compared to this research (Farhana, 2024).

Based on these previous studies, it can be concluded that Artificial Intelligence has great potential to support and improve Arabic language learning. However, most of the previous research was still conceptual, descriptive, based on literature studies, or limited to different levels of education and learning media. Empirical research that tests the effectiveness of AI implementation quantitatively using primary data on Arabic language learning at the madrasah level is still relatively limited.

Therefore, the novelty of this research lies in testing the effectiveness of implementing Artificial Intelligence (AI) in Arabic language learning through a quantitative approach using primary data obtained directly from grade XI students at MAN Pekalongan. In addition, this study also strengthens quantitative findings through interviews with teachers to gain a more contextual understanding of the implementation, opportunities, and challenges of AI integration in Arabic language learning.

METHOD

This research applies a quantitative approach as well as a type of field research (*field research*). A quantitative approach is used to test the relationship between variables and to objectively and

measurably assess how independent variables relate to dependent variables (Scott, 2019). In this study, the independent variable is the use of *Artificial Intelligence* (AI) as a learning medium (X), and the dependent variable is the effectiveness of Arabic learning (Y). Quantitative research focuses on measuring research variables as numbers, which are then analyzed using statistical procedures to obtain objective and generalizable conclusions (Creswell & Creswell, 2018). This approach also allows researchers to systematically test hypotheses based on empirical data obtained from the field (Scott, 2019)

The population in this study includes all students of grade XI MAN Pekalongan. The sampling techniques applied are *simple random sampling*, which is a method of random sampling without considering the level in the population so that every member of the population has an equal opportunity to be sampled (Scott, 2019). Based on this technique, 68 students were selected as the research sample, comprising 33 students from class XI.1 and 35 from class XI.3. Both classes were included as respondents and analyzed as a single sample group representing the population of grade XI students at MAN Pekalongan. The simple random sampling technique was chosen because it provides equal opportunities for every individual in the population so that it can reduce bias in sample selection and increase the validity of the research results (Scott, 2019). Thus, the results of the study are expected to represent the condition of the population more accurately (Creswell & Creswell, 2018).

Before use, the research instrument is tested for validity and reliability. The validity test is carried out to determine the level of accuracy of the instrument in measuring the object being studied, while the reliability test is used to see the level of consistency of the measuring instrument to produce stable data (Scott, 2019). The validity test is carried out to ensure that each item of the statement is really capable of measuring the variable in question, while the reliability test aims to determine the consistency of the measurement results if the instrument is used repeatedly under the same conditions (Ghozali, 2021). A good instrument must meet both criteria in order for the resulting data to be reliable in further analysis (Scott, 2019).

Furthermore, hypothesis testing through a t-test to measure the influence separately. In addition, a coefficient of determination (R^2) test was performed to assess how much the independent variable contributed to the dependent variable (Scott, 2019). To obtain accurate and systematic analysis results, data processing is carried out using the application *Statistical Package for the Social Sciences* (SPSS). According to Imam Ghozali in his book, the t-test is used to determine the partial influence of independent variables on dependent variables. In contrast, the coefficient of

determination measures how much the independent variables explain the variation in the dependent variable (s). The use of SPSS in quantitative research helps researchers process data quickly, precisely, and systematically, thereby improving the accuracy of the analysis (Ghozali, 2021).

This research was conducted at MAN Pekalongan, Central Java, Indonesia, during the 2025/2026 academic year. The data used in this study consisted of primary and secondary data. Primary data were obtained through questionnaires distributed to 68 students, consisting of 33 students from class XI.1 and 35 students from class XI.3. In contrast, secondary data were collected from books, scientific journals, articles, and other relevant references related to Artificial Intelligence (AI), Arabic language learning, learning media, and learning effectiveness. The research hypotheses were formulated as follows: H_0 stated that the use of Artificial Intelligence (AI) has no significant effect on the effectiveness of Arabic language learning among grade XI students at MAN Pekalongan. In contrast, H_1 stated that the use of Artificial Intelligence (AI) has a significant effect on the effectiveness of Arabic language learning among grade XI students at MAN Pekalongan.

FINDINGS AND DISCUSSION

Findings

This section presents the results of an analysis of the effect of using Artificial Intelligence (AI) on the effectiveness of Arabic language learning among grade XI students at MAN Pekalongan. The research data were obtained through the distribution of questionnaires to respondents and analyzed using a quantitative approach to determine the relationship and contribution of variables of the use of AI to learning effectiveness. The analysis was carried out to assess the extent to which the application of AI in the learning process can support the creation of more interesting, flexible, and student-centered learning experiences.

To test this influence, the study used a simple linear regression analysis, with the use of Artificial Intelligence (AI) as the independent variable (X) and learning effectiveness as the dependent variable (Y). The results of the analysis are presented in a regression coefficient table that shows the direction of the relationship, the magnitude of the influence, and the level of significance between the two research variables.

Table 1. T-Test Results

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Say.
		B	Std. Error	Beta		
1	(Constant)	1.674	2.947		0.568	0.527
	USE OF AI	0.961	0.071	0.859	13.629	0.000
a. Dependent Variable: Learning Effectiveness						

Source: Primary Data processed using SPSS 2026

Based on Table 1, the significance value of the AI use variable is 0.000 < 0.05 and the t-value is 13.629 > 1.997. Therefore, H_0 is rejected and H_1 is accepted. These findings show that the use of Artificial Intelligence (AI) has a positive and significant effect on the effectiveness of Arabic language learning among grade XI students at MAN Pekalongan. This is in line with the opinion (Simon, 2023) which states that AI designed with human-like learning abilities has the potential to address various obstacles to implementing learning in the educational environment. The coefficient of determination (R Square) of 0.738 indicated that the use of AI explained 73.8% of the variation in Arabic learning effectiveness. In comparison, the remaining 26.2% was attributable to other factors outside this study. These findings reinforce the view that AI can support more personalized, adaptive, and differentiated learning according to students' needs (Holmes et al., 2019). These findings show that AI also supports more flexible learning and in accordance with students' learning needs (Anwar & Mufidah, 2024).

According to theoretical studies, the applications of Artificial Intelligence (AI) technology in the learning process fall under the concept of technology-based learning, which can increase learning effectiveness by providing more interactive, adaptive, and flexible materials. The use of AI allows learners to receive real-time feedback, access materials tailored to each individual's needs, and increase engagement during the learning process. The use of AI allows learners to get feedback promptly *Real-time*, as well as the delivery of materials tailored to the needs of each individual, and increasing engagement during the learning process (Fitrah et al., 2024). This condition makes the learning process not only teacher-centered but also encourages students' independent learning. The use of technology also provides more independent and adaptive learning opportunities for students (Meiliyati & Yeti, 2024). These findings are in line with Ridwan et al. (2025) who stated that AI can increase the effectiveness of language learning (Ridwan et al., 2025).

Based on the frequency distribution of the questionnaire data, most respondents stated that the use of AI helps them understand the material, provides a more engaging learning experience, and facilitates access to learning anytime, anywhere. Statements related to ease of access and

learning experience indicate that the percentage falls in the high category, i.e., from agree to agree strongly. This can be seen in the statement (Arabic material that previously felt difficult became clearer after I used AI), with 39.7% of respondents answering yes and 16.2% strongly agreeing. In addition, in the statement (I am more enthusiastic about learning Arabic with the use of AI media) it was found that 38.2% of respondents were likely to give a yes answer and 14.7% strongly agreed.

Furthermore, the statement (Overall, learning Arabic becomes more effective with the help of AI) also showed high results: 36.8% of respondents were likely to answer yes, and 14.7% strongly agreed. This condition shows that AI serves as an effective learning medium for improving the quality of Arabic language learning. However, some respondents are still in the neutral category. This can be seen in the statement (I am more active when learning Arabic using AI learning media) with 60.3% of respondents answering neutrally, as well as in the statement (The use of AI increases my motivation to learn Arabic) with 54.4% of respondents answering neutrally. This indicates that not all students experience the full benefits of AI. This condition can be triggered by several factors, including differences in ability to use technology, conventional learning habits, and students' initial understanding of different Arabic materials. Thus, even though AI has been proven effective, its use still needs to be optimized so that it is felt equally by all students.

Discussion

However, the quantitative research findings were also strengthened by interviews with Arabic teachers at MAN Pekalongan. Based on the interview results, teachers view Artificial Intelligence (AI) as a learning assistant that can facilitate the delivery of materials, the creation of learning media, and increased student involvement during teaching and learning activities. According to the teacher, the use of AI in learning Arabic at MAN Pekalongan has begun to be implemented, although it is still limited to listening skills. The use of AI in this aspect is considered effective because it can provide more engaging audio and visual media that align with students' learning needs.

In practice, teachers utilize various AI-based platforms to support the learning process. Apps like ChatGPT, Gemini, and Canva are used to help produce more engaging materials, illustrations, and visual learning media. In addition, text-to-speech technology is used to produce Arabic speech that serves as a listening training medium. Teachers also use TTS Maker, Suno, and Plotagon to create interactive media in the form of audio, video, and educational games that support students' language skills. Meanwhile, the Zep Quiz application is used as a vocabulary learning medium (*mufriad*), packaged as interactive quizzes to increase student participation in the learning process. The use of these platforms shows that AI can support more personalized and adaptive learning to

meet students' needs (Hady et al., 2025). The use of AI also supports student engagement through more varied learning activities (Zuhri et al., 2024).

The results of the interviews show that the use of various AI-based media has a positive impact on the classroom learning atmosphere. Teachers observed an increase in students' enthusiasm for participating in Arabic language learning. Students become more active in asking questions, discussing, and engaging in various learning activities that use AI media. Additionally, the use of more varied and interactive media increases students' motivation to learn, thereby improving learning outcomes. These findings are in line with the results of the questionnaire analysis, which show that most respondents feel that learning becomes more engaging, easier to understand, and more effective after using AI as a learning medium. This finding is also in line with the research of Amadi and Hikmah (2025) which shows that students have a positive perception of the use of AI technology in learning Arabic because it can increase access to learning, facilitate material understanding, and support a more flexible learning process (Shabur et al., 2025). Students' acceptance of technology is also a supporting factor for learning effectiveness (Sakaroni & Azanulhaq, 2024).

The results of this study are in accordance with the results of research published in the journal Mahira which states that the application of artificial intelligence technology in the Arabic language learning process can increase learning effectiveness because it can provide a more interactive and flexible learning experience according to the needs of students (Zakiyah et al., 2024). In addition, research from the Kalamuna journal also shows that AI technology, especially generative ones, has an important role in improving the quality of learning through the provision of materials that are flexible, responsive, and able to adapt to students' abilities (Said et al., 2025). The two studies reinforce this study's finding that artificial intelligence makes a significant contribution to increasing the effectiveness of Arabic language learning.

Nonetheless, teachers also revealed some obstacles in the application of AI in the classroom. One of the main challenges is the need for careful planning and preparation before AI-based media is used in learning. Teachers must first design the right learning concept so that the technology used really supports the achievement of learning goals. The use of AI also requires appropriate pedagogical strategies to be used optimally in learning (Azwir et al., 2024). In addition, teachers are required to be able to operate and understand the various AI platforms to be used. Another obstacle is the availability of learning support devices, as not all students carry or have adequate electronic devices to access AI-based media. Successful AI implementation also requires institutional support

and adequate infrastructure readiness (Dahlan et al., 2025). Therefore, the success of AI implementation depends not only on the sophistication of the technology used but also on teachers' readiness, effective learning planning, and adequate facilities and infrastructure. The success of AI implementation is also influenced by teachers' pedagogical readiness (Adhimah et al., 2024).

The findings of the interviews further strengthen the results of this study's statistical analysis, indicating that the use of AI not only has theoretical and quantitative effects on learning effectiveness but also has a real impact on the practice of learning Arabic at MAN Pekalongan. AI serves as a tool that supports teachers in creating more interesting, interactive, and student-centered learning, thereby improving learning effectiveness. The use of AI can also expand students' learning experiences through more flexible interactions and easier access to learning (Sunarko et al., 2025). These results show that AI contributes to creating a more interactive and learner-centered learning environment (Ridho et al., 2025).

Based on interview results and research findings, the use of AI also has the potential to support students' independent learning outside the classroom. Through various AI-based applications, students can review misunderstood material and receive corrections directly. This is very helpful for learning Arabic, which requires repeated practice, especially for mastering vocabulary, sentence structure, and the rules of nahwu and shorof. With AI, students are not only recipients of material, but also active and independent in exploring knowledge. This condition shows that AI can support independent learning through access to available learning resources on an ongoing basis, so that students have the opportunity to learn at their own pace and needs (Mustofa & Arifin, 2026).

The findings show that the use of AI contributes positively to the effectiveness of Arabic language learning. The more optimal the use of AI in the learning process, the greater the opportunity to create interactive, engaging, and effective learning for students.

CONCLUSION

Based on research conducted with grade XI students at MAN Pekalongan, the use of AI in learning activities has been shown to help students understand Arabic materials, create more engaging learning activities, and provide flexibility in accessing learning anytime, anywhere. However, the use of AI has not been fully effective in improving aspects of student activity and motivation, as shown by the still-neutral responses to some questionnaire indicators. Thus, it can be emphasized that the higher the level of use of Artificial Intelligence (AI) in Arabic language learning among grade XI students at MAN Pekalongan, the higher the learning effectiveness that can be

achieved. However, optimizing the benefits of AI requires strengthening students' digital literacy and improving teachers' competence in integrating technology into learning activities. Therefore, the implementation of AI needs to be accompanied by appropriate pedagogical strategies and institutional support so that its benefits can be felt more evenly and effectively in the context of Arabic language learning.

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