

The Effectiveness of Artificial Intelligence in Improving Arabic Speaking Skills

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Abstract: This research investigates the effectiveness of Artificial Intelligence, specifically GPT-powered platforms, in improving Arabic speaking skills among high school students. Amid persistent challenges in traditional Arabic instruction, including limited speaking practice, low learner confidence, and minimal individualized feedback. AI is recognized as a promising solution to create more adaptive, interactive, and supportive learning environments. Employing a pre-experimental quantitative design, the study involved 34 eleventh-grade students at Madrasah Aliyah Negeri 2 Padang, utilizing a one-group pretest-posttest method analyzed using SPSS. AI-driven direct method steps were integrated into speaking activities, including immersive Arabic-only input, real-time feedback, and personalized learning paths. The results show significant increases in post-test scores and N-Gain values, with over 80% of students achieving medium and high proficiency improvement. Statistical analysis by one-sample t-test confirmed a substantial and consistent positive effect on performance ($t = 55.157$, $p < 0.001$, mean difference = 74.618). The findings align with prior research and expert opinion, highlighting AI's potential to personalize practice, reduce speaking anxiety, and foster greater student confidence and engagement. AI-powered tools are demonstrated to enhance Arabic speaking competency, presenting a powerful complement to conventional instruction and opening new opportunities for effective, inclusive language learning.

Keywords: effectiveness; artificial intelligence; gpt; improving; arabic; speaking skill; maharah kalam.

How To Cite: Wahyuni, A., & Fakhrin, N. (2025). The Effectiveness of Artificial Intelligence in Improving Arabic Speaking Skills. *At-Tarbiyah: Jurnal Pendidikan Islam*, 16(2), 171-180.
doi:<https://doi.org/10.15548/attarbiyah.v16i2.12914>

Article info: Submitted: 12th September 2025 | Revised: 11th Oktober 2025 | Accepted: 30th November 2025

INTRODUCTION

The rapid integration of Artificial Intelligence into language education has reshaped how learners acquire speaking skills in many world languages, including Arabic. Global data indicate significant growth in AI-powered language learning platforms (Hussain et al., 2024). The HolonIQ (2023) report reveals that AI language learning tools account for more than 40 percent of global ed-tech investment, signaling a strong shift toward data-driven language pedagogy. This shift not only enhances learning accessibility but also enables more adaptive approaches to individual learner needs, thus opening doors to innovations in language education that were previously difficult to achieve through conventional methods. Within Arabic language instruction, however, several studies highlight persistent challenges.

In the context of Arabic language learning specifically, several studies highlight persistent challenges despite technological advancements. UNESCO reports that more than 60 percent of learners of Arabic as a second language struggle with speaking proficiency due to limited exposure, low confidence, and insufficient interactive learning environments (Chazy, 2022). Traditional classroom methods often provide limited speaking practice, lack real-time feedback, and rely heavily on teacher-centered instruction. Data from the Islamic Educational, Scientific and Cultural Organization in 2022 indicate that Arabic learners frequently report few opportunities for authentic speaking practice and insufficient individualized feedback (Ahariani et al., 2025). This exacerbates speaking proficiency issues, where traditional classroom methods often rely too heavily on teacher-centered instruction, with limited speaking practice and minimal real-time feedback. This situation not only hinders learner progress but also underscores the need for new approaches that can address these barriers through more responsive technology. Thus, AI integration emerges as a potential solution to create more dynamic and supportive learning environments. These challenges reflect limitations in traditional teaching methods that often fail to provide authentic and continuous speaking practice.

In education in general, AI has emerged as a tool for personalization at scale, automating routine tasks while supporting higher-order learning (Taherdoost & Madanchian, 2023). Reports from systematic reviews of AI in education emphasize benefits such as adaptive learning, intelligent tutoring, and analytics-driven feedback that can boost student achievement and tailor pacing to individual needs (Kayyis, 2025). Research by Sari et al., (2024) shows that using AI in learning systems increases student test scores compared to traditional learning, affirming that AI can simplify challenges in student life. AI can be equipment for any task in the student life, because the difficulties can be easier by AI tools. Educators are increasingly adopting engaging educational approaches for instance game-based learning and mobile learning. In a research, using AI make students to receive the practice and allows them by progress faster (Huang et al., 2023). These findings indicate that AI has great potential to be applied in Arabic language learning, especially in the area of speaking skills, which has been a weak point for many learners. AI not only automates routine aspects but also facilitates deeper and more personalized learning, thus overcoming the limitations of traditional methods. With the ability to provide repeated practice and instant feedback, AI can help Arabic language learners overcome barriers such as limited exposure and low confidence. This makes AI a highly relevant tool for enhancing the effectiveness of language learning, particularly in a global context where access to native tutors is limited.

According to research, AI is not only used widely in education but is also applied specifically to Arabic language learning. Studies that discuss the broad application of AI in Arabic language education explain that technologies such as chatbots, voice recognition systems, and smart learning platforms can make the learning process more adaptive, interactive, and personalized (AlAfnan, 2025). This research confirms that AI helps shift learning away from traditional lecture-based models toward more communicative, data-driven approaches, while also increasing student motivation and participation in Arabic language learning. In the field of speaking and pronunciation, several studies have developed voice-recognition-based intelligent tutoring systems for Arabic (Ouisaadane et al., 2020). Shao's research developed an AI-based Arabic Language and Speech Tutor (Al-ALST) for the Moroccan dialect that utilizes automatic speech recognition and BiLSTM with an attention mechanism. This system can automatically detect pronunciation errors

and provide feedback based on metrics such as accuracy, precision, recall, and score, with most words achieving high evaluation performance above approximately 80 percent on the best model. These findings indicate that AI can serve as an always-available pronunciation coach for Arabic language learners and fill the gap left by native speaker tutors (Shao et al., 2022).

The implementation of AI for Arabic language learning in the current era therefore requires developers and educators to focus not only on reading, listening, and writing, but also on communicative speaking skills. The digital environment provides learners with unprecedented opportunities to develop their Arabic speaking ability. AI-based conversational systems allow learners to practice speaking Arabic through real-time interaction while receiving individualized feedback on their performance (Supriyanto & Toifah, 2024). These technologies help learners achieve better outcomes by reducing dependence on native speakers, extending available practice time, and creating flexible and accessible speaking environments (Fahmi & Adhimah, 2024). At the same time, despite these opportunities, empirical studies that rigorously measure the effectiveness of AI-based tools specifically on Arabic speaking skills, particularly in formal instructional settings, remain limited. This research gap highlights the need for systematic investigation into how and to what extent AI can effectively improve Arabic speaking proficiency.

Furthermore, the integration of AI into Arabic language learning offers great potential to address traditional challenges in developing speaking skills, supported by global data and specific research showing benefits such as personalization, interactivity, and real-time feedback. However, to fully realize this potential, further research is needed that focuses on practical applications in formal educational environments. Thus, this introduction establishes a foundation for deeper exploration into how AI can revolutionize Arabic language learning, ensuring that learners can achieve higher and more sustainable speaking proficiency in an increasingly digital global context.

METHOD

This short study assessed the Effectiveness of Artificial Intelligence by GPT in Improving Arabic Speaking Skills. A research design through quantitative was applied to conduct this study. Quantitative research is the method of employing numerical values derived from observations to explain and describe the phenomena that the observations can reflect on them (Taherdoost, 2022). This study used experimental research method with some participants that they are part of population. The participants were 34 students of senior high school in eleventh-grade group C at Madrasah Aliyah Negeri 2 Padang. The type of quantitative research is pre-experimental design or one group pretest-posttest design. Giving a pretest for the group C will describe the ability of them, and then giving the posttest will describe their speaking skill improvement. The researches made of analysis from the result and compare the result after using the artificial intelligence (GPT). For the effectiveness of using AI in improving Arabic language skill, the researcher use a One sample t-test by using SPSS 27.

RESULT AND DISCUSSION

Artificial Intelligence, or AI, refers to computer systems that can perform tasks which typically require human intelligence, such as problem-solving, learning, and decision-making (Harry, 2023). These systems make use of algorithms and large datasets to simulate processes like reasoning, recognizing patterns, and making predictions. AI

technology can be found in applications that interact with humans, analyze complex data, or respond to commands. In the realm of education, AI has become a transformative force, offering personalized learning experiences and automating time-consuming administrative tasks (Zhai et al., 2021). AI can analyze each student's progress and learning style, then adapt lessons or suggest materials that are best suited for them. This helps both students who need extra support and those who are ready for greater challenges, allowing education to move at an individualized pace.

The benefits of AI in education are extensive. AI can offer instant feedback and assessments, enabling students to quickly identify and work on their weaknesses (Supriyanto & Toifah, 2024). Educators also gain powerful insights into student performance, helping them provide better targeted interventions. By automating administrative tasks like grading and attendance, AI frees up teachers to focus on student engagement and high-impact teaching activities. AI also enhances accessibility and inclusivity in education. It provides real-time translation and speech-to-text tools, supporting students from various linguistic backgrounds and those with disabilities. AI-powered systems make high-quality educational resources more widely available, overcoming geographic and socio-economic barriers (Khalilova et al., 2025). For students who may be shy or hesitant, AI-powered language learning platforms and chatbots can create safe environments to practice and develop confidence. For the step of using AI in Arabic speaking applied by direct method.

GPT or Generative Pre-trained Transformer is an advanced artificial intelligence language model developed by OpenAI. It uses deep learning and massive datasets to understand, generate, and interact using human language in a highly flexible way (Lelepary et al., 2023). GPT can engage of the students' interactive conversation practice in chat-based or spoken dialogue with GPT in Arabic, allowing safe, repeated practice without time or judgement pressure (Kwon et al., 2023). GPT can be assists in writing too, essays, stories, or summaries, offering suggestions for word choice, structure, and clarity. It can also summarize Arabic texts, translate, or simplify complex material (Nur et al., 2024). Practical steps for applying the direct method in Arabic speaking skill learning with AI integration is:

Table 1. Steps of direct method by AI

No	Description
1 Immersion with Arabic-only Input	
1.	Use AI-powered GPT platforms that present all instructions, dialogue, and practice exclusively in العربية (Arabic).
2.	AI chatbots and voice assistants interact with students only in العربية to build habit and confidence.
2 Audio-visual Context and Repetition	
1.	Select AI-driven learning tools that provide visual scenarios (videos, animated simulations, role-play) paired with spoken Arabic.
2.	Students repeat the AI's model sentences, focusing on listening and mimicking authentic pronunciation and intonation.
3 Speaking Practice with Real-time Feedback	
1.	Employ AI speech recognition by GPT that analyzes students' pronunciation.
2.	The AI detects mispronunciation and provides instant corrections, allowing students to practice and improve on the spot.
4 Interactive Spoken Exercises	
1.	Create frequent question-answer or conversational simulations directly in العربية.
2.	AI generates prompts based on student level and responses, adapting difficulty and content dynamically.

No	Description
5	Vocabulary Building and Contextual Drills 1. AI presents new vocabulary in context, followed by pronunciation, sentence-building, and usage within real-life scenarios. 2. Voice-enabled flashcards and AI-generated mini-dialogues reinforce retention.
6	Record and Review Speaking Performance 1. Students record their own Arabic speech and let AI platforms analyze fluency, accuracy, and errors. 2. AI archives progress, highlights recurring mistakes, and tracks improvement over time.
7	Personalized Adaptive Learning Paths 1. AI monitors students' progress and customizes next-step learning modules (topics, difficulty, skills) for speaking practice. 2. Learners receive tailored assignments and challenges designed to address their unique gaps and strengths.
8	Participation in Virtual Arabic Conversation Groups 1. AI systems set up peer-to-peer where students interact and converse in العربية in a safe, AI-moderated environment. 2. AI coaches intervene with tips, corrections, and encouragement when needed.
9	Assessment and Feedback 1. After practice sessions, AI automatically gives formative feedback and a summary of spoken skill gains. 2. Students visualize their skill development, target weaknesses, and plan future learning.

The implementation of GPT-powered AI platforms following the direct method steps in three senior high school classes resulted in significant improvements in students' Arabic speaking abilities. Throughout immersive learning sessions, students engaged exclusively in العربية using AI chatbots and interactive voice assistants. This constant exposure, alongside audio-visual scenarios and conversational drills personalized by AI, helped students develop greater confidence and fluency in real-world communication. The AI's ability to provide instant pronunciation feedback, adaptive content, and individualized correction ensured that every student received targeted support based on their progress and unique challenges.

Moreover, regular practice in virtual Arabic conversation groups, moderated and prompted by AI, created a safe environment for students to interact, ask questions, and refine their speaking skills without fear of judgement. By leveraging features such as real-time error analysis, personalized assignments, and automated performance monitoring, students showed marked increases in post-test scores and N-Gain values. Teachers observed that even typically shy or hesitant learners became more engaged and articulate, confirming that AI-driven direct method steps not only accelerated skill acquisition but also fostered inclusive, student-centered learning experiences in the classroom.

Based on the assessment of 34 participants, the data in Table 1 presents students' pre-test and post-test scores alongside the calculated N-Gain for each student after the integration of Artificial Intelligence (AI) in Arabic speaking.

Table 1. Result of pre-test and post-test

Nama Siswa	Pre-test	Post-test	N-Gain
Siswa 1	60	77	0,43
Siswa 2	70	80	0,33
Siswa 3	70	85	0,50
Siswa 4	55	75	0,44
Siswa 5	70	81	0,37
Siswa 6	75	86	0,44

Nama Siswa	Pre-test	Post-test	N-Gain
Siswa 7	75	82	0,28
Siswa 8	70	88	0,60
Siswa 9	80	95	0,75
Siswa 10	80	91	0,55
Siswa 11	85	94	0,60
Siswa 12	60	74	0,35
Siswa 13	70	88	0,60
Siswa 14	65	77	0,34
Siswa 15	60	88	0,70
Siswa 16	75	82	0,28
Siswa 17	60	85	0,63
Siswa 18	55	82	0,60
Siswa 19	80	94	0,70
Siswa 20	50	72	0,44
Siswa 21	65	80	0,43
Siswa 2	65	76	0,31
Siswa 23	70	81	0,37
Siswa 24	70	79	0,30
Siswa 25	50	72	0,44
Siswa 26	65	86	0,60
Siswa 27	80	88	0,40
Siswa 28	70	82	0,40
Siswa 29	50	76	0,52
Siswa 30	70	81	0,37
Siswa 31	55	82	0,60
Siswa 32	75	83	0,32
Siswa 33	60	84	0,60
Siswa 34	60	78	0,45
Total	2270	2804	-
Mean	66,76	82,47	-
Min	50	72	-
Max	80	94	-

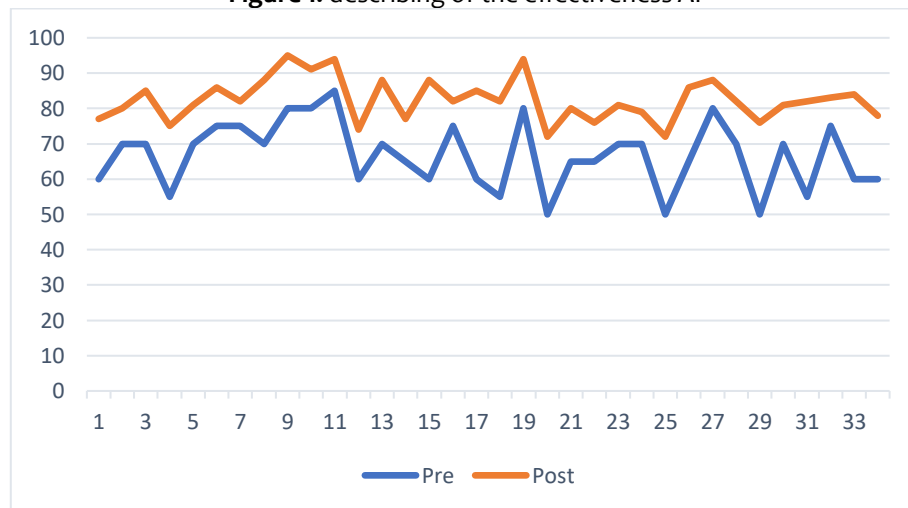
The N-Gain values among students ranged from 0.28 to 0.75. According to the commonly accepted interpretation, an N-Gain score of less than 0.30 is considered low, 0.30–0.70 is medium, and above 0.70 is high. Most participants (over 80%) achieved a medium N-Gain, with several students (e.g., Siswa 9, Siswa 15, and Siswa 19) obtaining high N-Gain, indicating substantial improvement in Arabic speaking skills following AI-based learning interventions. On average, the majority of post-test scores were significantly higher than the pre-test scores. The pre-test results show that most students started with scores between 50–80, whereas their post-test results improved, with many students reaching scores between 70–95. The increase in scores illustrates the positive impact of AI applications, such as speech recognition, feedback, and personalized practice on students' speaking proficiency.

The distribution of N-Gain further supports the effectiveness of AI. Several students, such as Siswa 9 and Siswa 19, achieved N-Gain values of 0.75 and 0.70 respectively, classified as “high gain.” These students likely benefitted from features offered by AI platforms, such as individualized pronunciation feedback, interactive simulations, and adaptive task recommendations that addressed their specific learning gaps. Furthermore, the absence of students with negative or zero N-Gain values reinforces that AI not only facilitated progress but also prevented stagnation or regression in skill acquisition. The findings align with prior research indicating that technology-based,

adaptive learning tools can foster significant improvements in language skills by enabling more frequent, personalized, and low-anxiety practice opportunities.

AI as a medium for learning Arabic is considered very useful in supporting learning in the Society 5.0 era. The use of AI can increase motivation, competitiveness, and independence of students by providing more adaptive and interactive learning (Putri & Hasan, 2023). AI tools also help reduce anxiety about speaking a foreign language, provide a stress-free learning environment, accelerate progress, and provide automatic and personalized feedback on pronunciation, clarity, and fluency (Nhan et al., 2025). AI is very effective for independent practice, confidence building, and real-time correction. However, the accuracy of information, ethical support, and the development of technology that is sensitive to cultural contexts and human roles remain important focuses in its application.

Figure 1. describing of the effectiveness AI



The positive impact seen in students' speaking skills after using GPT-powered direct method steps such as improved fluency, confidence, and pronunciation reflects broader findings in AI-assisted language education. For instance, research by AIAfnan (2025) emphasizes that AI has transformed the classroom experience from teacher-centered, lecture-based methods to more adaptive, communicative, and data-driven approaches. In your classes, students engaged in frequent AI-mediated conversations and interactive tasks, which echoes the increased motivation and participation highlighted in AIAfnan's findings.

Specifically in Arabic speaking and pronunciation, numerous studies support your results. Ouisaadane et al., (2020) and Shao et al., (2022) both demonstrated how AI-driven voice recognition systems and intelligent tutoring platforms can automatically evaluate student speech, detect errors, and provide instant, personalized feedback. Shao's research on AI-ALST for the Moroccan dialect achieved high accuracy in identifying and correcting pronunciation issues, serving as a "virtual native speaker" available anytime for practice. Likewise, your results show that students benefitted most from AI's abilities to offer immediate corrections, adaptive practice, and continuous performance monitoring, bridging gaps often found in traditional learning environments without instant feedback or one-on-one coaching. Overall, your research further confirms that AI-powered tools meaningfully enhance communicative competence and learning outcomes in Arabic speaking for high school students.

Table 2. One sample test

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Hasil	55.157	34	<,001	74.618	71.92	77.32

The t-test results show a highly significant difference, with a t value of 55.157 and a p-value less than 0.001, indicating that the observed improvement in scores is not due to chance. The mean difference in scores is 74.618, and the 95% confidence interval ranges from 71.92 to 77.32. This means we can be very confident that the true average increase falls within this interval, providing strong statistical evidence that the intervention produced a substantial and consistent positive effect on student performance.

In summary, the use of Artificial Intelligence in Arabic speaking instruction has demonstrated moderate to high effectiveness for most students, as evidenced by positive N-Gain values and improved post-test scores. These outcomes suggest that AI-powered tools can serve as a valuable complement to traditional instruction, helping students enhance their Arabic speaking capabilities more efficiently and confidently. In the context of Arabic speaking, AI applications are proving especially useful. AI-driven platforms can offer personalized pronunciation feedback, vocabulary practice, and conversational simulations without the fear of being judged Samiya, (2025). These platforms are capable of adjusting exercises based on the learner's proficiency and recording progress over time, which is valuable for Arabic, a language with complex phonetics and diverse dialects. AI in education including for Arabic speaking enables more engaging, efficient, and tailored learning experiences (Anwar & Ahyarudin, 2023). It empowers learners to progress at their own pace, offers instant guidance, and helps teachers focus on meaningful interactions. As these technologies develop, the goal remains to harness AI as a supportive tool that complements, rather than replaces, the essential human role in education.

CONCLUSION

The research demonstrates that the integration of Artificial Intelligence, specifically GPT-powered platforms and direct method steps, produces a significant and consistent improvement in Arabic speaking skills among high school students. The statistical analysis, including the t-test results is 55.157 and significant <0.05, confirms that the observed gains are substantial and not due to chance, with students showing marked increases in post-test scores and overall proficiency. This evidence highlights AI as a powerful and effective tool to enhance language learning, making instruction more adaptive, personalized, and accessible for diverse learners.

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