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Enhancing Beginner *Maharah Istimāʿ* through AI Voice Assistants: A Malaysian Classroom Study

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Abstract

This study investigates the use of AI voice assistants to enhance beginner students' maharah istimāʿ in a Malaysian Arabic classroom. Beginner learners often experience difficulties in recognizing Arabic sounds, understanding short spoken expressions, and connecting written vocabulary with oral input due to limited exposure to authentic listening practice. Using a quasi-experimental mixed-method design, this study involved 60 Form Four students at an Islamic secondary school in Kedah, Malaysia. The experimental group received AI voice assistant-supported listening practice, while the control group received conventional teacher-led listening instruction over six weeks. Data were collected through listening tests, classroom observation, questionnaires, and semi-structured interviews. The findings showed that the experimental group achieved greater improvement than the control group, particularly in vocabulary recognition, short expression comprehension, and simple dialogue understanding. Students also reported higher motivation, confidence, and willingness to repeat Arabic listening tasks through AI-supported practice. The study concludes that AI voice assistants can function as structured listening companions when integrated with teacher guidance, validated prompts, and beginner-level objectives. This research contributes to Arabic language pedagogy by offering a classroom-based model for ethical and interactive AI-supported maharah istimāʿ instruction.

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INTRODUCTION

Maharah istimāʿ is a foundational skill in Arabic learning because beginner learners first encounter Arabic through sounds before they are able to produce meaningful oral expressions. Listening enables learners to recognize phonemes, identify vocabulary, understand short expressions, and gradually connect spoken input with communicative meaning. For non-native beginners, however, Arabic listening is often challenging due to unfamiliar sounds, short vowels, connected speech, intonation, and limited exposure to authentic Arabic outside the classroom (Dalman & Plonsky, 2022; Hijriyah et al., 2025).

In Malaysian Islamic schools, Arabic has an important religious and academic position, yet many beginner learners still experience Arabic primarily as a classroom subject rather than as a language used in daily oral interaction. Students may memorize vocabulary or understand written

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forms, but they often struggle when the same vocabulary appears in spoken form with natural rhythm and pronunciation. This condition shows that Arabic listening instruction requires more than passive audio repetition; it needs interactive, repeated, and learner-friendly practice that helps students build confidence in receiving Arabic input (Almelhes, 2025; Yuliani & Sopian, 2025).

The development of artificial intelligence has opened new possibilities for language learning, especially through conversational agents, chatbots, and voice-based assistants. AI-supported learning tools can provide flexible practice, immediate responses, personalized repetition, and opportunities for learners to interact with language outside limited classroom time. Recent studies indicate that AI chatbots and conversational systems can support language learning by increasing learner engagement, autonomy, and willingness to communicate when they are integrated with clear pedagogical design (Huang et al., 2022; Ji et al., 2023; Lyu et al., 2025).

Among these technologies, AI voice assistants are particularly relevant to listening instruction because they operate through spoken input and spoken output. Unlike text-based chatbots, voice assistants allow learners to hear language, repeat expressions, respond to prompts, and experience simulated oral interaction. Studies on intelligent personal assistants such as Google Assistant and Alexa show that voice-based AI can support listening comprehension, speaking practice, and learner confidence, especially when the activities are structured and teacher-guided (Dizon et al., 2022; Tai & Chen, 2023; Tai & Chen, 2024).

For beginner Arabic learners, AI voice assistants may offer three important advantages. First, they provide repeated listening exposure that learners can access at their own pace. Second, they allow learners to practice listening through short interactive exchanges rather than only one-way audio materials. Third, they may reduce anxiety because students can practice privately before participating in classroom interaction. These affordances are highly relevant for maharah istimāʿ, where beginners need repeated input, slow progression, and supportive feedback before developing stronger oral competence (Jeon et al., 2023; Kim & Su, 2024).

However, the existing literature still shows a clear gap. Most studies on AI voice assistants and speech-recognition chatbots focus on English, Korean, Japanese, or general foreign-language learning contexts. Research on AI in Arabic learning has begun to discuss Arabic chatbots, AI-based writing support, text-to-speech technology, and personalized listening materials, but empirical classroom studies on AI voice assistants for beginner maharah istimāʿ remain limited, especially in Malaysian Islamic education contexts (Alazzam et al., 2023; Hijriyah et al., 2025; Zainuddin et al., 2026).

This gap is important because Arabic listening has linguistic and pedagogical characteristics that differ from many other foreign languages. Beginner learners must recognize Arabic phonological contrasts, short vowels, word boundaries, and sentence patterns while also managing anxiety and limited exposure. Therefore, AI voice assistants cannot simply be adopted as general digital tools; they need to be examined as pedagogical scaffolding that supports beginner listening comprehension in a real classroom setting (Jeon et al., 2023; Yuliani & Sopian, 2025).

Based on this background, the present study investigates the use of AI voice assistants to enhance beginner maharah istimāʿ in a Malaysian classroom context. This study focuses on how voice-based AI supports learners' ability to recognize Arabic sounds, understand short spoken expressions, respond to basic listening tasks, and develop confidence in Arabic listening practice. By situating AI voice assistants within beginner Arabic pedagogy, this study contributes to the

discussion of ethical, teacher-guided, and level-appropriate AI integration in Islamic school language education (Ji et al., 2023; Wiboolyasarin et al., 2025).

The contribution of this study is threefold. First, it extends AI-supported language learning research by focusing specifically on Arabic listening rather than general chatbot use or productive skills. Second, it offers a classroom-based model for integrating AI voice assistants into beginner maharah istimāʿ practice. Third, it provides contextual evidence from Malaysian Islamic education, where Arabic learning is institutionally significant but still requires innovative strategies to strengthen listening exposure, learner confidence, and communicative readiness. Thus, this study argues that AI voice assistants, when guided by teachers and aligned with beginner-level objectives, can become a meaningful tool for making Arabic listening practice more interactive, accessible, and pedagogically measurable.

METHOD

This study employed a quasi-experimental mixed-method design to examine the effectiveness of AI voice assistants in enhancing beginner students' maharah istimāʿ in a Malaysian Arabic classroom. The quantitative phase used a pre-test and post-test design to measure students' listening improvement, while the qualitative phase explored students' learning experiences, classroom engagement, and perceived challenges during AI-supported listening practice. This design was selected because mixed-method research allows learning outcomes to be measured statistically while also capturing the pedagogical process behind the intervention (Creswell & Creswell, 2023; Dawadi et al., 2021).

The research was conducted at an Islamic secondary school in Kedah, Malaysia, involving 60 beginner Arabic learners from Form Four. The students were divided into two groups: an experimental group consisting of 30 students who received AI voice assistant-supported listening practice, and a control group consisting of 30 students who received conventional listening instruction using teacher-led audio repetition and textbook-based exercises. The participants were selected purposively because they represented beginner-level Arabic learners with limited exposure to spoken Arabic outside formal classroom activities (Cohen et al., 2018; Almelhes, 2025).

The intervention was implemented over six weeks, with two sessions each week. Each session lasted approximately 40 minutes and focused on beginner-level Arabic listening themes, including greetings, classroom instructions, daily activities, numbers, time expressions, short questions, and simple dialogues. In the experimental group, students practiced listening through an AI voice assistant that provided Arabic prompts, short spoken expressions, pronunciation models, repetition opportunities, and simple response-based activities. The teacher prepared and controlled the prompts to ensure that the Arabic input was appropriate for beginner learners, aligned with the syllabus, and free from inaccurate or overly complex language (Tai & Chen, 2024; Yuliani & Sopian, 2025).

The learning procedure in the experimental group consisted of four stages: listening exposure, repetition, response-based practice, and teacher-guided feedback. First, students listened to short Arabic input delivered through the AI voice assistant. Second, they repeated the expressions individually or in pairs to strengthen sound recognition and word segmentation. Third, they responded to simple listening tasks, such as identifying meanings, choosing correct responses, or matching spoken expressions with pictures or written forms. Fourth, the teacher provided

clarification, corrective feedback, and reinforcement so that AI-supported practice remained pedagogically guided rather than fully machine-directed (Ji et al., 2023; Jeon et al., 2023).

Meanwhile, the control group received the same listening topics but without AI voice assistant interaction. The teacher delivered listening materials through conventional classroom procedures, including audio playback, repetition, vocabulary explanation, and written exercises. This comparison was intended to identify whether AI voice assistant-supported practice produced different listening outcomes compared with conventional teacher-led instruction, while keeping the learning topics and time allocation relatively equal between groups (Fraenkel et al., 2019; Tai & Chen, 2024).

Data were collected using four instruments: a listening test, classroom observation checklist, student questionnaire, and semi-structured interviews. The listening test measured sound discrimination, vocabulary recognition, comprehension of short expressions, and understanding of simple dialogues. The observation checklist recorded students' participation, attention, response accuracy, and confidence during classroom activities. The questionnaire measured students' perceptions of AI voice assistant-supported listening practice, while interviews with selected students and the Arabic teacher provided deeper qualitative insights into learner experience and classroom implementation (Cohen et al., 2018; Creswell & Creswell, 2023).

To ensure instrument validity, the listening test and questionnaire were reviewed by experts in Arabic language education and educational technology. A small pilot test was conducted before the main study to check item clarity, difficulty level, and time allocation. The reliability of the listening test and questionnaire was examined using internal consistency analysis. Items that were unclear, too difficult, or unsuitable for beginner learners were revised before being used in the actual data collection (Fraenkel et al., 2019; Creswell & Creswell, 2023).

Quantitative data were analyzed using descriptive and inferential statistics. Mean scores and standard deviations were calculated to describe students' pre-test and post-test performance. A paired-sample t-test was used to examine improvement within each group, while an independent-sample t-test was used to compare the post-test results of the experimental and control groups. Qualitative data from observation notes and interviews were analyzed thematically by identifying recurring patterns related to listening engagement, learner confidence, interaction with AI voice assistants, and classroom challenges (Braun & Clarke, 2022; Creswell & Creswell, 2023).

Ethical considerations were observed throughout the study. Permission was obtained from the school, and students were informed about the purpose of the research, the learning procedures, and their right to withdraw from the study. Student identities were anonymized, and all data were used only for academic purposes. The AI voice assistant was used under teacher supervision to prevent inappropriate input, inaccurate responses, and excessive dependence on technology. Thus, the study positioned AI not as a replacement for the teacher, but as a guided learning tool to support beginner Arabic listening practice (Ji et al., 2023; Kasneci et al., 2023; Tlili et al., 2023).

RESULTS AND DISCUSSION

Students' improvement in beginner maharah istimāʿ

The findings show that students who learned through AI voice assistant-supported listening practice demonstrated higher improvement than those who received conventional teacher-led listening instruction. Before the intervention, both groups had relatively similar listening ability,

indicating that the experimental and control groups started from a comparable beginner level. After six weeks of intervention, the experimental group showed a stronger increase in recognizing Arabic sounds, identifying familiar vocabulary, understanding short expressions, and responding to simple listening tasks. This finding supports previous studies showing that AI voice assistants and speech-recognition chatbots can strengthen language learning through repeated input, oral interaction, and immediate response opportunities (Jeon et al., 2023; Tai & Chen, 2024).

Table 1. Pre-Test and Post-Test Scores of Students' Maharah Istimāʿ

Group	N	Pre-test Mean	SD	Post-test Mean	SD	Mean Gain
Experimental group	30	55.40	8.12	78.63	7.45	23.23
Control group	30	54.97	7.88	64.20	8.01	9.23

The experimental group improved from M = 55.40 to M = 78.63, with a mean gain of 23.23 points. In contrast, the control group improved from M = 54.97 to M = 64.20, with a mean gain of 9.23 points. This difference suggests that AI voice assistant-supported practice provided more intensive listening exposure than conventional repetition. The result is consistent with Dizon et al. (2022), who found that intelligent personal assistants can support self-directed language practice, and with Hijriyah et al. (2025), who reported that AI-based personalized listening materials can enhance Arabic listening performance.

The paired-sample t-test confirmed that the improvement in the experimental group was statistically significant, $t(29) = 13.42$, $p < .001$, with a large effect size, Cohen's $d = 2.45$. The control group also showed significant improvement, $t(29) = 5.16$, $p < .001$, but with a smaller effect size, Cohen's $d = 0.94$. These results indicate that both instructional models contributed to learning progress, but the AI voice assistant model produced stronger gains in beginner listening comprehension. This finding aligns with Lyu et al. (2025), who found that chatbot-supported learning can produce positive language learning outcomes when compared with non-AI instruction.

Table 2. Statistical Comparison of Listening Improvement

Group	Test	t-value	df	p-value	Effect Size
Experimental group	Paired-sample t-test	13.42	29	< .001	2.45
Control group	Paired-sample t-test	5.16	29	< .001	0.94
Experimental vs control	Independent-sample t-test	7.22	58	< .001	1.86

The independent-sample t-test on post-test scores also revealed a significant difference between the experimental and control groups, $t(58) = 7.22$, $p < .001$, with a large effect size, Cohen's $d = 1.86$. This suggests that the difference was not only statistically significant but also pedagogically meaningful. In the context of beginner maharah istimāʿ, this result indicates that learners benefited from frequent exposure to short Arabic prompts, repeated listening opportunities, and interactive response-based practice. This supports the argument that AI should be used not as a replacement for teachers, but as a guided learning companion that extends listening practice beyond ordinary classroom repetition (Ji et al., 2023; Wiboolyasarin et al., 2025).

Performance across listening components

The improvement was not uniform across all listening components. The highest improvement appeared in vocabulary recognition and comprehension of short expressions, while sound discrimination showed moderate improvement. This indicates that AI voice assistant-

supported learning was particularly effective for helping students connect spoken Arabic input with familiar meanings. However, recognizing subtle Arabic sound contrasts remained challenging for some learners, especially sounds that do not exist in Malay or Indonesian phonology, such as /ḥ/, /kh/, /ṣ/, and /ḍ/. This finding is relevant to Yuliani and Sopian (2025), who noted that AI-based Arabic listening tools still need careful attention to pronunciation accuracy, prosody, and phonological complexity.

Table 3. Improvement By Listening Component

Listening Component	Pre-test Mean	Post-test Mean	Gain	Interpretation
Sound discrimination	56.10	73.40	17.30	Moderate improvement
Vocabulary recognition	54.80	81.20	26.40	High improvement
Short expression comprehension	55.60	79.90	24.30	High improvement
Simple dialogue comprehension	55.10	77.00	21.90	High improvement

The strongest gain in vocabulary recognition suggests that repeated voice-based exposure helped students retain and identify familiar words in spoken form. Many beginner learners initially knew Arabic vocabulary only through written memorization, but the AI-supported sessions helped them recognize the same vocabulary through sound. This finding strengthens the view that listening practice should not be separated from vocabulary development because beginner learners need to hear words repeatedly before they can understand them in connected speech (Dalman & Plonsky, 2022; Hijriyah et al., 2025).

The improvement in short expression and simple dialogue comprehension also indicates that AI voice assistants helped students process Arabic in meaningful chunks. Instead of listening to isolated words only, students were exposed to short functional expressions such as greetings, classroom commands, time expressions, and daily activities. This type of input is important because beginner listening comprehension develops gradually from sound recognition to phrase-level understanding and then to short communicative exchanges. This supports Jeon et al. (2023), who emphasized that speech-recognition chatbots can create semi-authentic interactional conditions for language learners.

Students' perceptions of AI voice assistant-supported listening practice

The questionnaire results show that students responded positively to the use of AI voice assistants in Arabic listening practice. The highest mean score was found in the item related to repeated listening access, followed by motivation, confidence, and ease of use. This indicates that students valued the opportunity to listen repeatedly without feeling embarrassed or rushed. Such findings are consistent with studies showing that AI-supported learning can increase learner autonomy, engagement, and willingness to communicate when the tool is easy to access and pedagogically structured (Kim & Su, 2024; Tai & Chen, 2023).

An important result is that students still reported a strong need for teacher guidance, with a mean score of 4.32. This means that although students appreciated the AI voice assistant, they did not perceive it as a complete substitute for the teacher. They needed the teacher to explain meanings, correct misunderstandings, control the difficulty of prompts, and ensure that the AI-generated input matched the learning objectives. This finding confirms Ji et al. (2023), who argue that conversational

AI works best when it collaborates with human teachers rather than replacing pedagogical supervision.

Table 4. Students' Perceptions of AI Voice Assistant-Supported Learning

Aspect	Mean	SD	Interpretation
Repeated listening access	4.48	0.51	Very high
Motivation to practice listening	4.36	0.58	Very high
Confidence in understanding Arabic sounds	4.21	0.63	High
Ease of using AI voice assistant	4.18	0.67	High
Helpfulness for vocabulary recognition	4.40	0.55	Very high
Need for teacher guidance	4.32	0.60	Very high

Qualitative findings from observation and interviews

Classroom observation and interviews revealed four main themes: repeated exposure, reduced anxiety, pronunciation awareness, and the importance of teacher mediation. First, students became more willing to repeat Arabic expressions because the AI voice assistant allowed them to listen multiple times. Several students who were initially passive began to participate more actively when the listening task was presented through short prompts and response-based activities. This supports the idea that AI voice assistants can create low-pressure opportunities for beginner learners to practice language reception and response (Dizon et al., 2022; Tai & Chen, 2024).

Second, students reported that AI-supported listening practice reduced their anxiety. They felt more comfortable repeating words or answering simple prompts because mistakes were not immediately judged by peers. This affective benefit is important for beginner Arabic learners because anxiety often prevents students from engaging with unfamiliar sounds. The finding is consistent with Kim and Su (2024), who found that AI chatbot interaction can influence learners' willingness to communicate, and with Jeon (2024), who highlighted the role of chatbot affordances in supporting learner confidence.

Third, the intervention increased students' awareness of Arabic pronunciation. During the AI-supported sessions, students repeatedly listened to the same expressions and began noticing differences between similar sounds. However, some students still required teacher correction when the AI output was too fast, too formal, or difficult to imitate. This suggests that AI voice assistants can support pronunciation awareness indirectly through listening repetition, but teacher feedback remains necessary to address phonological difficulties specific to Arabic (Yuliani & Sopian, 2025; Almelhes, 2025).

Fourth, teacher mediation emerged as a key factor in successful implementation. The teacher selected suitable prompts, simplified tasks, clarified vocabulary, and corrected errors after AI-based practice. Without teacher mediation, some students tended to treat the AI voice assistant as a translation or entertainment tool rather than a structured listening companion. This finding supports the human-AI collaboration perspective in language education, which emphasizes that AI tools should be integrated into instructional design rather than used as independent replacements for classroom pedagogy (Ji et al., 2023; Kasneci et al., 2023).

Overall, the findings indicate that AI voice assistants can enhance beginner maharah istimāʿ when they are used as structured, teacher-guided listening tools. The significant improvement in the experimental group suggests that repeated exposure, interactive listening prompts, and immediate

oral input helped learners develop stronger listening comprehension. This result contributes to AI-supported language learning literature by extending the discussion from general chatbot use to voice-based Arabic listening instruction (Jeon et al., 2023; Lyu et al., 2025).

The findings also contribute to Arabic language pedagogy by showing that beginner maharah istimāʿ benefits from short, repeated, and interactive listening activities. Traditional listening instruction often depends on teacher repetition or textbook audio, which may limit learners' exposure and reduce opportunities for individualized practice. AI voice assistants offer additional listening access, allowing students to repeat input at their own pace and engage with Arabic sounds more frequently. This supports previous Arabic listening research that highlights the value of AI-based and text-to-speech technologies for improving maharah istimāʿ (Hijriyah et al., 2025; Yuliani & Sopian, 2025).

However, the study also shows that AI voice assistants are not free from limitations. Some learners still struggled with sound discrimination, and some AI-generated outputs required teacher validation. These limitations show that Arabic listening instruction cannot rely fully on machine-generated input, especially for beginners who need accurate pronunciation models and carefully graded materials. Therefore, AI voice assistants should be used within a controlled pedagogical framework that includes teacher supervision, validated prompts, and clear learning objectives (Ji et al., 2023; Tlili et al., 2023).

In the Malaysian classroom context, the use of AI voice assistants is particularly meaningful because students often have limited opportunities to hear and respond to Arabic outside formal lessons. The tool created additional listening exposure and encouraged students to interact with Arabic in a more flexible way. This contextual contribution is important because Arabic learning in Islamic schools requires not only grammatical and textual knowledge, but also oral comprehension that prepares students for communicative use of Arabic in religious, academic, and social settings (Almelhes, 2025; Zainuddin et al., 2026).

The findings of this study also correspond with broader trends in AI-assisted second language learning. Recent bibliometric and systematic reviews show that AI in L2 education has moved from experimental novelty toward more pedagogically structured applications, particularly in areas related to interaction, feedback, personalization, and learner autonomy (Kartal & Yeşilyurt, 2024; Koç & Savaş, 2025). In this study, the AI voice assistant was not used as an isolated technological tool, but as part of a classroom sequence involving listening exposure, repetition, response-based practice, and teacher feedback. This confirms that AI integration becomes more educationally meaningful when it is embedded in a clear instructional design rather than used as a supplementary digital attraction (Lin & Chang, 2023; Kohnke et al., 2023).

Another important implication concerns teacher competence in AI-mediated language classrooms. Although students benefited from repeated AI-supported listening practice, the effectiveness of the intervention depended heavily on the teacher's ability to prepare prompts, monitor AI output, simplify listening tasks, and connect machine-generated input with classroom objectives. This finding is consistent with studies emphasizing that language teachers need professional generative AI competence to use AI tools ethically, critically, and pedagogically (Moorhouse et al., 2024; Kohnke et al., 2023). In beginner Arabic listening instruction, this competence is especially important because inaccurate pronunciation models, overly complex input, or culturally unsuitable examples may confuse learners if not filtered by the teacher.

The results further suggest that AI voice assistants can extend Arabic listening practice beyond the limitations of classroom time. Previous studies on intelligent personal assistants have shown that voice-based tools can provide mobile, repeated, and low-pressure opportunities for learners to interact with the target language outside formal instruction (Tai, 2024a; Tai, 2024b). In the present study, although the intervention was conducted in the classroom, students' positive responses to repeated listening access indicate that AI voice assistants may also support future out-of-class maharah istimāʿ practice. This is pedagogically relevant for Malaysian Islamic schools, where Arabic exposure outside scheduled lessons is often limited.

The improvement in listening comprehension also supports evidence from voice assistant research in other language contexts. Studies on Google Assistant and Mandarin intelligent personal assistants indicate that voice-based AI can improve learners' oral proficiency, listening-and-speaking ability, comprehensibility, and confidence when learners engage in repeated interaction with guided tasks (Fathi et al., 2025; Wu et al., 2024). Although Arabic has different phonological and morphological characteristics from English or Mandarin, these findings strengthen the argument that spoken AI interaction can support the transition from receptive listening practice to more active oral readiness.

At the same time, the study confirms that AI voice assistants should be used carefully in beginner language classrooms. Reviews of chatbot integration and ChatGPT use in education have repeatedly warned that AI tools may produce inaccurate, inappropriate, or pedagogically ungraded output if used without teacher control (Cislowska & Pena-Acuna, 2024; Lo, 2023). In this study, teacher mediation helped reduce such risks by validating prompts and clarifying difficult input. Therefore, the value of AI voice assistants in maharah istimāʿ does not lie in automation alone, but in the balance between machine-supported repetition and human pedagogical judgment.

Thus, this study argues that AI voice assistants can be positioned as a pedagogical bridge between passive listening materials and active classroom communication. They help beginner learners move from hearing isolated Arabic words to understanding short expressions and simple dialogues. More importantly, the findings suggest that the success of AI-supported maharah istimāʿ depends on the balance between technological affordance and teacher-guided instruction. When this balance is maintained, AI voice assistants can make Arabic listening practice more interactive, accessible, and measurable for beginner learners in Malaysian Islamic education.

CONCLUSION

This study demonstrates that AI voice assistant-supported listening practice can enhance beginner students' maharah istimāʿ in a Malaysian Arabic classroom. The experimental group showed greater improvement than the control group, particularly in vocabulary recognition, comprehension of short expressions, and simple dialogue understanding. These findings indicate that AI voice assistants can provide repeated listening exposure, interactive response-based practice, and a more supportive environment for beginner learners who often struggle with Arabic sounds, word segmentation, and limited oral input outside the classroom. The study therefore contributes to Arabic language pedagogy by showing that AI voice assistants can function as a structured listening companion when integrated with clear learning objectives and teacher supervision.

The main contribution of this study lies in positioning voice-based AI as a pedagogical bridge between passive audio materials and active Arabic communication. In the Malaysian Islamic

education context, AI voice assistants offer practical support for strengthening listening exposure, learner confidence, and readiness for oral interaction. However, the study is limited to one school, a relatively small sample, and a six-week intervention, so broader studies involving different school types, longer implementation periods, and more varied Arabic listening materials are needed. Future research may also examine AI voice assistants in relation to pronunciation accuracy, speaking fluency, learner autonomy, and teacher digital competence. Overall, this study suggests that ethical, teacher-guided, and level-appropriate AI integration can make beginner maharah istimāʿ learning more interactive, accessible, and pedagogically measurable.

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