

Comparing AI-Assisted Digital Learning Media for Maharah al-Istima': A Pedagogical Analysis of Spotify, Voicemaker, and Quizalize

**Zaedan Mutaqin¹; Lailatul Mardhiyah²; Umi Machmudah³; Muassomah⁴;
Mohd Fauzi bin Abdul Hamid⁵**

^{1,2,3,4}Universitas Islam Negeri Maulana Malik Ibrahim, Malang, Jawa Timur, Indonesia

⁵Universiti Sultan Zainal Abidin, Malaysia

¹Correspondence Email: zaedanmutaqin01@gmail.com

Article Info

Received: October 20, 2025

Accepted: January 23, 2026

Published: February 28, 2026

Online First: February 28, 2026

Keywords

Maharah al-Istima';
Artificial Intelligence;
Digital Learning Media;
Voicemaker.

Abstract

The increasing integration of Artificial Intelligence (AI) and digital technologies into language education has created new opportunities to improve Arabic listening instruction (maharah al-istima'). However, educators continue to face challenges in selecting digital learning media that best align with specific pedagogical objectives. This study comparatively examines the pedagogical characteristics of three AI-assisted learning applications – Spotify, Voicemaker, and Quizalize – to identify their respective contributions to maharah al-istima' instruction. A qualitative comparative research design was employed using systematic observation and document analysis. Data were analyzed through the Paired Comparison technique based on the six quality characteristics of the ISO 9126 model: Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability. The findings indicate that each application performs distinct yet complementary instructional functions. Spotify is most effective in providing authentic listening exposure through podcast-based learning, Voicemaker excels in producing adaptive AI-generated audio for customized instructional materials, while Quizalize strengthens formative assessment through interactive quizzes, immediate feedback, and gamification. Rather than functioning as competing technologies, the three applications collectively represent complementary stages of Arabic listening instruction encompassing authentic input, controlled practice, and interactive evaluation. This study contributes a comparative pedagogical framework for selecting and integrating AI-assisted digital learning media, providing practical guidance for educators to design more adaptive, evidence-based, and learner-centered maharah al-istima' instruction.

A. Introduction

The rapid advancement of Artificial Intelligence (AI) and digital learning technologies has fundamentally reshaped language education by transforming how learners access knowledge, engage with instructional materials, and develop communicative competence. AI-powered educational technologies have enabled adaptive learning systems, intelligent tutoring platforms, automated feedback, and interactive digital environments that provide more flexible, personalized, and authentic learning experiences than conventional classroom instruction (Jantakoon et al., 2025). Despite these advances, developing listening competence remains one of the greatest challenges in Arabic language education because the mastery of *maharah istima'* requires continuous exposure to authentic spoken language, repeated listening practice, accurate pronunciation models, and meaningful learner engagement (Yusuf Al-Ayubi et al., 2023; Nurhidayati et al., 2020). Consequently, identifying digital learning media capable of supporting these pedagogical demands has become an increasingly important concern for Arabic language educators seeking to improve instructional quality and learning outcomes.

Arabic language education has continuously evolved alongside developments in educational philosophy, instructional methodology, and digital technology (Wahida, 2021). The growing integration of AI into language learning has expanded opportunities for students to access learning resources beyond classroom boundaries while receiving immediate instructional support and personalized learning experiences. AI technologies now facilitate adaptive learning environments, real-time feedback, authentic speech generation, and individualized learning pathways that accommodate learners with different proficiency levels (Jantakoon et al., 2025; Rekan et al., 2025). These developments are particularly relevant to *maharah istima'*, since listening comprehension is not merely hearing spoken language but an active cognitive process involving pronunciation recognition, vocabulary acquisition, grammatical understanding, discourse interpretation, and contextual meaning construction (Yusuf Al-Ayubi et al., 2023; Nurhidayati et al., 2020). Therefore, effective listening instruction requires learning media capable of providing authentic, engaging, and pedagogically meaningful audio experiences that extend beyond conventional teaching approaches.

Recent developments in AI-supported audio technologies have introduced diverse pedagogical alternatives for Arabic listening instruction. Rather than relying exclusively on

teacher-generated recordings or direct interaction with native speakers, educators now have access to digital platforms that facilitate authentic audio exposure, AI-generated speech production, and interactive learning assessment. These innovations not only increase opportunities for independent listening practice but also enable teachers to design more flexible and learner-centered instructional environments by integrating authentic materials, customized audio resources, and formative assessment into a single learning ecosystem. Consequently, digital technologies have become increasingly important components of contemporary Arabic language instruction, particularly for strengthening learners' *maharah istima'* through technology-enhanced learning environments.

Among the growing number of digital applications, Spotify, Voicemaker, and Quizalize represent three distinctive yet complementary approaches to supporting listening instruction (Fitri et al., 2024; Abd Ghani et al., 2025). Spotify functions primarily as a platform for authentic audio exposure through podcasts and real-world listening resources, allowing learners to experience naturally occurring spoken Arabic in meaningful communicative contexts. Previous studies indicate that podcast-based learning offers flexible access to authentic listening materials regardless of time and location, thereby encouraging autonomous learning and continuous listening practice (Fairuza Mumtaz & Maman Abdurrahman, 2022). Furthermore, podcasts support constructivist learning by enabling learners to actively build understanding through repeated listening, independent exploration, and contextual interpretation of authentic language use while offering practical advantages such as accessibility, portability, reusability, and efficient bandwidth utilization (Usman, 2023; Hamid & Husein, 2024; Rahmah & Ahsanuddin, 2022; Padilah & Budiarti, 2023). These characteristics make Spotify particularly valuable for increasing authentic listening exposure in Arabic language learning.

In contrast, Voicemaker applies AI-driven *text-to-speech* technology to generate customizable native-like Arabic audio tailored to instructional needs. Through adjustable pronunciation, speech rate, pitch, volume, and accent selection, the platform enables educators to develop listening materials suitable for learners with varying language proficiency (Rosyad, 2022; Nasution et al., 2025). The emergence of realistic AI-generated voices has significantly reduced dependence on manually recorded native-speaker audio while improving efficiency in preparing instructional resources (Sarif & AR, 2024). Moreover, Voicemaker supports vocabulary instruction, dialogue development, pronunciation practice, instructional narration, and listening assessment,

making it a versatile technological resource for Arabic language education (Hamid & Husein, 2024). These features position Voicemaker as an innovative instructional medium capable of addressing practical challenges commonly encountered in conventional listening instruction.

Meanwhile, Quizalize contributes a different pedagogical perspective by integrating listening instruction with interactive formative assessment through gamification. Rather than functioning solely as a content delivery platform, Quizalize enables educators to design interactive listening activities that combine audio materials with immediate feedback, automated scoring, randomized assessment items, and real-time learning analytics (Rachmawati et al., 2023; Ritonga et al., 2024). Gamification features such as points, rankings, and challenges have been shown to increase learner motivation, participation, and classroom engagement (Fatoni & Ainiyah, 2024). In addition, the platform's analytical capabilities allow teachers to monitor students' learning progress, identify learning difficulties, and adapt instructional strategies according to learners' needs (Azmi et al., 2023). Accordingly, Quizalize functions not only as an assessment platform but also as an instructional tool that continuously supports the improvement of listening comprehension.

Although previous studies have demonstrated the educational benefits of Spotify, Voicemaker, and Quizalize, existing research has primarily investigated these applications separately, emphasizing their individual instructional advantages within isolated pedagogical contexts (Fairuza Mumtaz & Maman Abdurrahman, 2022; Rosyad, 2022; Rachmawati et al., 2023). Consequently, the current body of knowledge remains fragmented and provides limited understanding of how different categories of AI-assisted learning media compare in supporting *maharah istima'*. More importantly, little attention has been given to systematically examining their relative pedagogical characteristics, instructional functions, strengths, limitations, and complementary roles within a unified comparative framework. As a result, educators frequently select digital learning media based on personal preference or technological availability rather than empirical evidence capable of guiding informed pedagogical decisions.

To address this gap, the present study conducts a systematic comparative analysis of Spotify, Voicemaker, and Quizalize as learning media for *maharah istima'* in Arabic language education. Rather than evaluating these platforms independently, this study positions them as three complementary categories of AI-supported listening media representing authentic audio exposure, AI-generated speech production, and interactive

learning assessment. By comparing their pedagogical characteristics, instructional functions, and educational contributions, this study seeks to provide a comprehensive understanding of how each platform supports listening competence while identifying their respective strengths, limitations, and potential complementarities within technology-enhanced Arabic language instruction.

Theoretically, this study extends current scholarship by shifting the focus from single-platform evaluation toward a comparative pedagogical framework that offers broader insights into AI-assisted Arabic language learning. Practically, the findings are expected to provide empirical guidance for educators in selecting, integrating, and optimizing digital learning media according to instructional objectives, learner characteristics, and classroom contexts. Ultimately, this study contributes to the advancement of technology-enhanced Arabic language education by providing an evidence-based framework for designing more adaptive, learner-centered, and pedagogically effective *maharah istima'* instruction in the era of Artificial Intelligence.

B. Method

This study employed a qualitative comparative research design to examine the pedagogical characteristics of three AI-assisted digital learning applications—Spotify, Voicemaker, and Quizalize—in supporting *maharah istima'* instruction. A qualitative comparative approach was selected because the study aimed to identify and interpret the similarities, differences, strengths, and limitations of each application rather than measure their statistical effectiveness (Arikunto, 1989).

The units of analysis consisted of the pedagogical characteristics, technological features, and instructional functions of Spotify, Voicemaker, and Quizalize. These applications were purposively selected because they represent three complementary approaches to Arabic listening instruction: authentic audio exposure (Spotify), AI-based *text-to-speech* technology (Voicemaker), and interactive formative assessment (Quizalize).

Data were collected through systematic observation of each application to examine their features, usability, instructional functions, strengths, and limitations in supporting *maharah istima'* learning. To enhance the credibility of the findings, the observations were complemented by a comparative review of relevant scholarly publications discussing the implementation of the three applications in language learning. The combination of application observation and document analysis enabled methodological triangulation and strengthened the interpretation of the findings.

Data were analyzed using qualitative comparative analysis supported by the Paired Comparison technique, which systematically compares alternative objects based on predetermined evaluation criteria (Nanda et al., 2023). Each application was compared to identify its distinctive pedagogical characteristics, instructional advantages, limitations, and potential contributions to Arabic listening instruction.

The analysis adopted the ISO 9126 software quality model as the analytical framework (Saputra et al., 2021). The applications were evaluated based on six quality characteristics: Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability. These dimensions provided a systematic basis for comparing the technological quality and pedagogical suitability of each application for *maharah istima'* learning.



Figure 1. ISO 9126 Model

The six ISO 9126 characteristics served as the analytical indicators throughout the comparative evaluation process. Each application was systematically examined according to these indicators before the findings were synthesized to identify common characteristics, distinctive strengths, pedagogical limitations, and potential complementarities among the three applications. The resulting comparative framework provides practical evidence that can assist Arabic language educators in selecting and integrating digital learning media according to specific instructional objectives and learners' needs.

This study did not involve human participants or personal data requiring formal ethical approval. The analysis was conducted using publicly accessible digital applications and published scholarly literature in accordance with the principles of academic integrity, transparency, and responsible research practice. All evaluations

were performed objectively using the ISO 9126 framework to ensure the credibility and reproducibility of the findings.

C. Results and Discussion

1. Pedagogical Characteristics of Digital Learning Platforms for *Maharah Istima'*

a. Spotify and Podcast

The comparative observation reveals that Spotify primarily functions as an authentic audio-learning platform that supports the development of *maharah istima'* through continuous exposure to naturally occurring spoken language. Unlike conventional listening materials that are often limited to teacher-prepared recordings, Spotify provides unrestricted access to a wide range of podcasts containing authentic linguistic input, including conversations, storytelling, vocabulary practice, grammar explanations, and educational discussions. This finding indicates that Spotify contributes not only as a digital repository of audio materials but also as a learning environment that facilitates repeated listening practice and autonomous language learning.

From the observation, Spotify demonstrates considerable pedagogical value because learners can access listening materials regardless of time and location. This flexibility allows students to engage in repeated listening activities according to their individual learning pace, thereby increasing opportunities to internalize pronunciation patterns, vocabulary, discourse structures, and communicative expressions. Since listening competence develops progressively through frequent interaction with authentic spoken language, unrestricted access to audio resources becomes an important pedagogical advantage in Arabic language learning. These findings suggest that Spotify effectively addresses one of the major challenges in *maharah istima'*, namely the limited availability of authentic listening materials beyond classroom instruction.

The present findings are consistent with Salsabila et al. (2021), who describe Spotify as one of the world's most widely used digital streaming platforms, providing extensive access to music, podcasts, and educational audio content. Beyond its entertainment function, the platform increasingly serves educational purposes by offering authentic audio resources that can be integrated into language learning. Likewise, Mumtaz and Abdurrahman (2022) explain that podcast technology enables learners to stream or download digital audio materials through various podcasting platforms, allowing listening practice to occur independently of classroom schedules. This flexibility extends learning

opportunities beyond formal instructional settings and promotes learner autonomy, an important principle in technology-enhanced language learning.

Another important finding concerns the diversity of instructional materials available through Spotify. The observation identified podcasts that cover multiple aspects of Arabic language learning, including *mufradat*, *muhadatsah*, grammar (*tarākīb wa qawā'id al-lughah*), storytelling, and thematic discussions. Such diversity enables instructors to select listening materials according to learners' proficiency levels and instructional objectives rather than relying on a single type of audio resource. Consequently, Spotify provides flexibility not only for students but also for teachers when designing listening activities that gradually increase linguistic complexity.

From a pedagogical perspective, the observation further indicates that Spotify supports constructivist learning by encouraging learners to actively construct meaning through repeated listening, contextual interpretation, and independent exploration of authentic spoken language. Rather than receiving information passively, students continuously compare pronunciation, infer meaning from context, and strengthen comprehension through repeated exposure. This observation aligns with Usman (2023), who argues that podcast technology reflects constructivist learning principles because learners actively process and interpret information obtained from authentic listening experiences. Similarly, Padilah and Budiarti (2023) emphasize that podcasts can be systematically integrated into Arabic listening instruction for vocabulary learning, conversational practice, grammar instruction, and listening assessment, making them versatile learning resources rather than supplementary media.

Table 1. Podcasts as a Learning Media for Maharah Istimā'

No.	Podcast Name	Description
1.		This podcast contains learning materials on listening skills (maharah istima') based on fairy tales from various provinces in Indonesia, presented in an interesting format and accompanied by links to illustrated vocabulary, practice questions, and educational games for students majoring in Arabic Literature at Malang State University. This podcast can be accessed via the following link: https://open.spotify.com/show/2KxCmGzSUtZsRdJ4LzFDJ1?si=q5aQ-Y2sRouRwSAtr7icQg

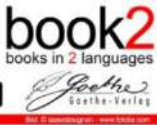
No.	Podcast Name	Description
2.		Arabic for Beginners Series 1-25, containing 100 audio lessons for learning basic Arabic, consisting of vocabulary, expressions, and short dialogues, all spoken by native speakers. This podcast was developed by Moslem Community, which offers quick and easy Arabic language learning from books. This podcast can be accessed via the following link: https://open.spotify.com/episode/1zvZgAiNhooaV4bZtHXWKg?si=EnvxVVZ_SoCtSyCd9tlcXw
3.		This podcast is a channel from Poppy Suprpto developed by jannatulfirdaus.net containing Arabic language lessons on grammar (tarakib wa qawaid al-lughah) consisting of 45 episodes, each of which is explained by a different source. This podcast can be accessed via the following link: https://open.spotify.com/playlist/7xf8zumOyDZvFV6lhvAKXL?si=5fb9d6ca9b34443a

Table 1 further demonstrates the educational diversity of Arabic learning podcasts available on Spotify. The examples presented illustrate that podcast content ranges from fairy tale-based listening materials and beginner-level Arabic lessons to grammar-focused instructional series. These observations reinforce the finding that Spotify can accommodate different instructional purposes and learner characteristics. More importantly, the availability of multiple podcast formats allows teachers to select learning materials that correspond to curriculum objectives while simultaneously encouraging students to engage in self-directed listening outside formal classroom sessions. This flexibility is particularly valuable because successful listening instruction requires sustained exposure rather than isolated classroom activities.

The observation also identifies several practical advantages that strengthen Spotify's pedagogical value. Podcast materials can be replayed repeatedly without additional production costs, accessed through multiple digital devices, and distributed efficiently with relatively low bandwidth requirements. These characteristics support learning continuity and increase accessibility for students with different technological resources. Hamid and Husein (2024) similarly highlight that podcasts transcend temporal and spatial limitations, are relatively easy to produce, and require fewer technical skills than video-based instructional materials. Furthermore, Rahmah and Ahsanuddin (2022) argue that podcasts possess considerable educational potential because they are portable, easy to operate, and continuously accessible through

contemporary digital technologies. Collectively, these characteristics position Spotify as an efficient platform for extending listening practice beyond classroom instruction.

Despite these strengths, the comparative observation also reveals several pedagogical limitations. Spotify primarily emphasizes authentic audio exposure but provides limited opportunities for interactive learning, immediate feedback, or systematic assessment of listening comprehension. Students may repeatedly access high-quality listening materials; however, the platform itself cannot determine whether learners have accurately interpreted the information presented. In addition, variations in pronunciation, regional dialects, speech rate, and authentic communicative contexts may create comprehension difficulties, particularly for beginning learners who possess limited linguistic competence. The absence of visual support may also reduce instructional effectiveness for students with stronger visual learning preferences. These findings indicate that although Spotify performs exceptionally well as an authentic input medium, it cannot independently support the complete learning cycle required in *maharah istima'* instruction.

Overall, the comparative observation demonstrates that Spotify's principal pedagogical contribution lies in strengthening authentic listening exposure and promoting learner autonomy through unrestricted access to diverse Arabic audio resources. Rather than functioning as a comprehensive instructional platform, Spotify is better positioned as an authentic-input medium that complements other AI-assisted technologies capable of generating customized audio materials and facilitating interactive assessment. Consequently, its integration with platforms such as Voicemaker and Quizalize may provide a more balanced and pedagogically comprehensive approach to developing *maharah istima'* in contemporary Arabic language education.

b. Voicemaker and Text to Speech

The comparative observation indicates that Voicemaker performs a fundamentally different pedagogical function from Spotify by emphasizing AI-assisted audio production rather than authentic audio exposure. While Spotify primarily provides ready-made listening materials, Voicemaker enables educators to generate customized Arabic audio that corresponds directly to instructional objectives and learners' proficiency levels. This flexibility makes Voicemaker particularly valuable in *maharah istima'* instruction, where the difficulty level of listening materials often determines learners' comprehension and confidence during the learning process.

The observation shows that Voicemaker utilizes Artificial Intelligence-based *text-to-speech* technology capable of converting written Arabic text into realistic spoken language. The platform provides more than one thousand synthetic voices across over 130 languages and dialects, including various Arabic accents (Rosyad, 2022). Unlike conventional audio production, which depends heavily on native-speaker recordings, Voicemaker enables teachers to produce listening materials instantly while maintaining considerable control over pronunciation, speech rate, intonation, and volume. This capability significantly increases instructional flexibility because audio materials can be adapted to specific lesson objectives without requiring extensive recording sessions.

From a pedagogical perspective, this flexibility is particularly important because listening instruction should gradually progress from controlled input to authentic language exposure. The observation indicates that teachers can simplify listening materials by reducing speech speed, emphasizing pronunciation, or selecting particular voice characteristics that correspond to learners' linguistic competence. Such customization is difficult to achieve when relying exclusively on authentic podcasts or native-speaker recordings. Consequently, Voicemaker provides an instructional bridge between simplified classroom materials and authentic listening resources.

These findings are consistent with Sarif and AR (2024), who explain that *text-to-speech* technology substantially improves efficiency by converting written text into downloadable audio without requiring direct recording by native speakers. Similarly, Hamid and Husein (2024) argue that AI-generated audio can be effectively integrated into Arabic language learning through vocabulary presentation, dialogue practice, instructional narration, and listening assessment. Rather than replacing authentic listening experiences, AI-generated speech expands teachers' capacity to design instructional materials that are pedagogically aligned with learners' developmental stages.

The observation further reveals that Voicemaker supports multiple instructional scenarios beyond listening practice. Teachers may generate audio for short dialogues, narrative texts, grammar exercises, pronunciation drills, and multimedia learning resources. Because all audio is produced from editable written text, instructional materials can be revised quickly whenever curriculum content changes or learners require additional practice. This adaptability represents an important pedagogical advantage compared with conventional audio production, which often requires considerable time and technical preparation.

Table 2. Features of Voicemaker

No	Feature	Description
1.	Voice Section	The audio feature provides more than 1,000 realistic human voices across various languages and dialects, with a wide range of accents.
2.	Custom Voice	Users can edit and customize voice attributes such as pitch, intonation, volume, and speech rate by adding pauses or emphasis.
3.	Convert Speech	The audio files can be downloaded in various formats, such as MP3, WAV, OGG, OPUS, and AAC, with adjustable sample rates.
4.	API Develop	Integrating text to speech capabilities into applications and software.
5.	Cloning Voices	Voice cloning functionality that allows the creation of custom voices not included in the default voice templates.

Table 2 demonstrates that Voicemaker provides several technological features supporting instructional flexibility, including voice selection, custom voice configuration, speech conversion, API integration, and voice cloning. Among these features, customizable voice settings represent the most pedagogically significant characteristic because they enable educators to regulate pronunciation clarity, speech rate, and intonation according to learners' needs. This finding indicates that Voicemaker is not merely an audio-generation platform but also an instructional design tool capable of supporting differentiated learning within Arabic listening instruction.

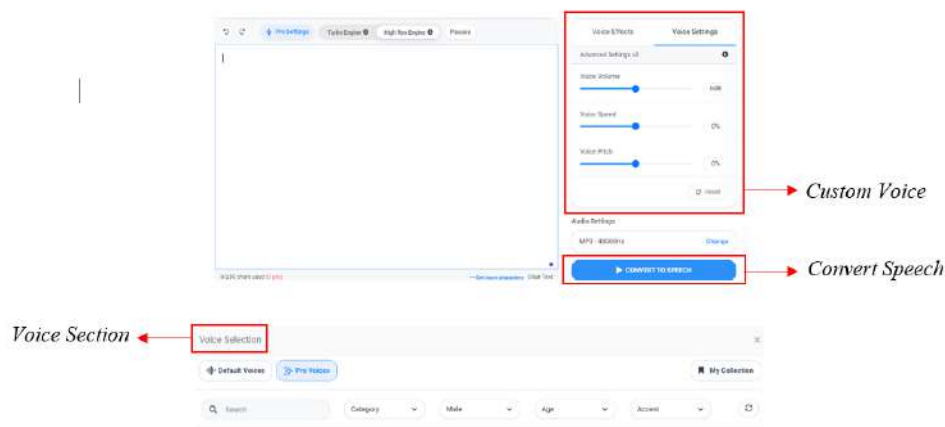


Figure 2. Features of Voicemaker

Figure 2 further illustrates the interface and functionality available within the platform. The observation confirms that the integration of voice customization and multiple export formats enable teachers to produce instructional materials suitable for various digital learning environments. Audio files can be incorporated into presentation

media, learning management systems, mobile learning applications, or interactive assessment platforms. Such interoperability increases the instructional value of Voicemaker by allowing AI-generated audio to be integrated seamlessly into broader technology-enhanced learning ecosystems.

Nevertheless, the comparative observation also identifies several limitations. Although the generated voices are generally natural and intelligible, they still cannot fully reproduce the spontaneity, emotional expression, and communicative nuances characteristic of authentic human interaction. In addition, some advanced customization features require premium access, potentially limiting their use in institutions with restricted financial resources. The platform also demands a certain degree of technological competence from educators, particularly when utilizing advanced voice settings or integrating generated audio into other instructional systems. These findings are consistent with Fauzan and Hartati (2018), who note that while Voicemaker offers realistic speech synthesis and flexible integration capabilities, users require time to master its more sophisticated functions.

Another important observation concerns the pedagogical role of AI-generated speech itself. Although Voicemaker provides highly controllable instructional input, excessive dependence on synthetic audio may reduce learners' opportunities to encounter the natural variation of authentic Arabic speech, including regional accents, spontaneous discourse, and real communicative interaction. Consequently, Voicemaker should not be viewed as a substitute for authentic listening materials but rather as a complementary instructional technology that prepares learners for more complex listening experiences. Controlled listening practice using AI-generated audio may strengthen pronunciation awareness and vocabulary recognition during the early stages of learning before students progress to authentic listening resources.

Overall, the findings demonstrate that Voicemaker contributes to *maharah istima'* primarily by enhancing teachers' capacity to design adaptive, customizable, and pedagogically controlled listening materials. Compared with Spotify, which emphasizes authentic language exposure, Voicemaker offers greater instructional control over linguistic input. However, because authentic communication remains an essential objective of language learning, AI-generated speech should ideally complement rather than replace authentic audio resources. Integrating Voicemaker with authentic podcast materials and interactive assessment platforms therefore provides a more comprehensive approach to developing Arabic listening competence than relying on a single instructional technology.

c. Quizalize dan Quiz Maker

The comparative observation indicates that Quizalize occupies a distinctive pedagogical position among the three applications by emphasizing interactive formative assessment rather than authentic audio exposure or AI-assisted audio production. While Spotify primarily functions as a source of authentic listening input and Voicemaker facilitates the creation of customized instructional audio, Quizalize integrates listening activities with immediate assessment, feedback, and learner engagement. This characteristic positions Quizalize as an instructional medium that not only evaluates listening comprehension but also reinforces learning through continuous interaction and formative feedback.

The observation reveals that Quizalize incorporates gamification principles into Arabic language learning through features such as leaderboards, points, badges, challenges, and real-time scoring. These elements transform listening assessment from a conventional testing activity into a more engaging learning experience, encouraging students to participate actively throughout the instructional process. Rather than functioning solely as an assessment platform, Quizalize creates an environment in which listening practice, feedback, and evaluation occur simultaneously. Such integration is particularly valuable in *maharah istima'* because listening competence develops not only through repeated exposure but also through continuous verification of learners' understanding.

The findings are consistent with Fatoni and Ainiyah (2024), who argue that gamification significantly increases learner motivation by incorporating competitive and interactive elements into classroom activities. Likewise, Azmi et al. (2023) emphasize that Quizalize provides an intuitive interface that facilitates online learning while allowing teachers to organize interactive instructional activities efficiently. These findings suggest that the educational value of Quizalize extends beyond technological innovation, as its design directly supports learner engagement and active participation during listening instruction.

The observation further indicates that Quizalize provides several pedagogically valuable assessment features, including immediate feedback, automatic scoring, randomized question sequences, and learning analytics. These capabilities enable teachers to identify students' listening difficulties more efficiently than conventional paper-based assessment. Real-time performance reports also allow instructors to monitor learning progress continuously and adapt instructional strategies according to students' achievement levels. Such findings support the argument of Rachmawati et al. (2023), who

explain that Quizalize facilitates formative assessment by enabling teachers to evaluate learning outcomes while simultaneously improving instructional decision-making.

Another important finding concerns the integration of audio materials into interactive assessment. The observation demonstrates that Quizalize allows teachers to embed long-duration audio recordings into quiz items, enabling learners to listen repeatedly before answering comprehension questions. This feature transforms assessment into an additional learning opportunity because students continue processing spoken language while receiving structured evaluation. Consequently, listening assessment becomes part of the learning process itself rather than merely a mechanism for measuring achievement.



Figure 3. Quizalize-Based Learning Media for Maharah Istima'

Figure 3 illustrates the implementation of Quizalize in Arabic listening instruction by integrating audio input with visual support and interactive questions. The observation confirms that this combination enables learners to strengthen vocabulary retention, pronunciation recognition, and listening comprehension through repeated interaction with instructional content. Unlike traditional listening tests that provide delayed feedback, Quizalize immediately informs learners whether their responses are correct, allowing misconceptions to be corrected during the learning process. From a pedagogical perspective, this immediate feedback supports self-regulated learning because students can monitor their own progress and identify areas requiring further practice.

Despite these advantages, the observation also identifies several limitations. The effectiveness of Quizalize depends heavily on stable internet connectivity and the

availability of appropriate digital devices, which may not always be accessible in every educational context. Furthermore, although gamification increases motivation, excessive emphasis on rankings and response speed may unintentionally shift students' attention from comprehension quality to competition. Listening competence should primarily reflect learners' ability to interpret spoken language accurately rather than merely respond quickly. Therefore, teachers should carefully balance competitive elements with reflective listening activities to ensure that assessment remains aligned with instructional objectives.

Another limitation concerns the nature of Quizalize itself. Unlike Spotify and Voicemaker, which directly provide or generate listening materials, Quizalize depends on instructional content prepared by teachers. Consequently, the educational quality of Quizalize is strongly influenced by the quality of audio materials, question design, and instructional strategies employed by educators. This finding indicates that Quizalize functions most effectively when integrated with high-quality listening resources rather than operating as an independent instructional platform.

Overall, the comparative observation demonstrates that Quizalize contributes to *maharah istima*' primarily by strengthening formative assessment, learner engagement, and instructional feedback. Compared with Spotify, which emphasizes authentic language exposure, and Voicemaker, which focuses on AI-assisted audio production, Quizalize occupies the final stage of the listening learning cycle by evaluating learners' comprehension and providing immediate instructional feedback. This complementary role suggests that Quizalize should be viewed not as an alternative to other digital applications but as an integral component of a technology-enhanced Arabic listening ecosystem that combines authentic input, customized audio production, and interactive assessment into a coherent pedagogical framework.

2. ISO 9126-Based Comparison of Podcast, Voicemaker, and Quizalize

The comparative analysis based on the ISO 9126 quality model demonstrates that Spotify, Voicemaker, and Quizalize possess distinct technological characteristics and pedagogical functions in supporting *maharah istima*' instruction. Rather than identifying a single application as universally superior, the analysis reveals that each platform offers complementary strengths that correspond to different instructional objectives. This finding suggests that the pedagogical value of digital learning media

should be interpreted according to their instructional roles rather than their technological sophistication alone.

Table 3. Differences among Podcast, Voicemaker and Quizalize Applications Based on the ISO 9126 Model Indicators

Indicators	Podcast	Voicemaker	Quizalize
Functionally	Provides a wide range of functions for recording, editing, and publishing.	Focuses on audio creation and editing, offering a range of specialized features designed for professional audio users.	Provides functions for creating and managing interactive quizzes for learning purposes.
Reliability	High reliability with minimal technical disruptions during recording and storage.	Good reliability with support for multiple audio formats and secure storage.	High reliability in the storage and management of quiz data.
Usability	An intuitive and easy-to-use interface for new users.	A relatively complex interface with multiple features, requiring an initial learning period.	An intuitive and user-friendly interface for quiz creators and end users.
Efficiency	Efficient performance in audio recording and storage processes.	High efficiency in audio editing processes with strong hardware support.	Efficient performance in the storage and management of quiz data.
Maintainability	Easy to maintain and update through regular updates.	Requires greater maintenance effort as a result of its more complex feature set.	High maintainability, enabling efficient updates and modifications to accommodate user needs.
Portability (Portabilitas)	High portability, allowing adaptation across multiple platforms and devices.	Supports operation across multiple operating systems with sufficient system compatibility.	Easily adaptable to various devices and learning platforms.

Table 3 illustrates that the three applications perform differently across the six quality dimensions of the ISO 9126 model, namely Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability. These differences indicate that digital

learning applications should not be evaluated solely from a technical perspective but also from their pedagogical relevance to specific stages of Arabic listening instruction.

From the perspective of Functionality, Spotify provides comprehensive access to authentic podcasts and audio resources that support continuous listening exposure. Its primary strength lies in offering naturally occurring language input rather than structured instructional control. In contrast, Voicemaker demonstrates greater functionality for instructional content development because it enables educators to generate customized Arabic audio through AI-based *text-to-speech* technology. Quizalize, meanwhile, emphasizes assessment functionality by integrating listening materials with interactive quizzes, automatic scoring, and immediate feedback. These findings indicate that each application addresses different instructional needs: Spotify focuses on authentic input, Voicemaker on instructional audio production, and Quizalize on learning evaluation.

The comparison also reveals different patterns in Reliability and Efficiency. Spotify demonstrates stable streaming performance with minimal technical disruption during audio access, making it suitable for continuous listening practice. Voicemaker exhibits high efficiency in producing customized instructional audio while supporting multiple export formats that facilitate integration into different learning environments. Quizalize performs efficiently in organizing online assessment, storing learner performance, and providing real-time feedback. These differences suggest that reliability and efficiency should not be interpreted solely as software performance indicators but also as pedagogical resources that facilitate continuous learning activities.

Regarding Usability, Spotify and Quizalize demonstrate relatively intuitive interfaces that can be operated by both teachers and students with minimal technical training. Their simple navigation supports rapid implementation in classroom settings and independent learning. In contrast, Voicemaker provides more advanced customization options that increase instructional flexibility but also require greater technological competence from educators. Although this complexity may initially present a learning curve, it simultaneously enables teachers to produce listening materials that are more closely aligned with learners' linguistic needs. Therefore, usability should be interpreted not only in terms of operational simplicity but also in relation to the pedagogical control offered by each platform.

The analysis further indicates that Maintainability and Portability strengthen the educational sustainability of the three applications. Spotify continuously updates its

streaming services while maintaining compatibility across multiple devices and operating systems, allowing learners to access educational content through smartphones, tablets, and computers. Voicemaker similarly supports various operating systems and export formats, facilitating the integration of AI-generated audio into learning management systems, presentation software, and multimedia resources. Quizalize demonstrates high portability through cloud-based assessment that enables teachers and students to participate in learning activities regardless of location. These findings highlight the increasing importance of platform compatibility in supporting flexible and technology-enhanced Arabic language learning.

From a broader pedagogical perspective, the comparative analysis identifies three complementary instructional orientations represented by the applications. Spotify functions primarily as an authentic-input platform, providing learners with continuous exposure to naturally occurring spoken Arabic. Voicemaker serves as an AI-assisted instructional production platform, enabling teachers to create controlled listening materials that accommodate different proficiency levels. Quizalize operates as an interactive formative assessment platform, facilitating learner engagement while continuously monitoring listening comprehension through immediate feedback and learning analytics. These findings demonstrate that the three applications occupy different yet interconnected positions within the instructional cycle of *maharah istima'*.

An important contribution of this study lies in demonstrating that the effectiveness of digital learning media cannot be adequately understood when each application is evaluated independently. Previous studies have generally examined Spotify (Fairuza Mumtaz & Maman Abdurrahman, 2022), Voicemaker (Rosyad, 2022), and Quizalize (Rachmawati et al., 2023) as separate instructional technologies. The present comparative analysis extends these studies by positioning the three applications within a unified pedagogical framework, thereby revealing how their respective strengths complement one another throughout the listening learning process. Rather than competing technologies, they should be viewed as interconnected instructional resources that collectively support authentic exposure, controlled practice, and formative assessment.

This integrated perspective also offers important implications for instructional design in Arabic language education. Instead of relying on a single digital platform, educators may adopt a sequential instructional strategy that aligns each application with specific learning objectives. Spotify can be employed during the initial stage of learning to

provide authentic listening exposure and familiarize students with natural Arabic discourse. Subsequently, Voicemaker can be used to generate customized listening materials that reinforce vocabulary, pronunciation, and grammatical structures according to learners' proficiency levels. Finally, Quizalize may be implemented to evaluate listening comprehension, provide immediate feedback, and identify areas requiring further instructional support. Such integration enables teachers to design a more coherent and learner-centered instructional process than using each application independently.

From a theoretical perspective, the findings contribute to the growing body of research on AI-assisted language learning by proposing a comparative pedagogical framework for selecting digital media according to instructional function rather than technological popularity. This perspective extends current discussions on technology-enhanced Arabic language learning by demonstrating that digital applications possess complementary rather than competing educational roles. Consequently, the selection of instructional media should consider pedagogical objectives, learner characteristics, instructional context, and the specific stage of *maharah istima'* development.

Overall, the comparative findings confirm that Spotify, Voicemaker, and Quizalize should not be regarded as alternative technologies competing to perform the same instructional task. Instead, they represent three interconnected pedagogical dimensions within AI-supported Arabic listening instruction: authentic language exposure, adaptive instructional audio production, and interactive formative assessment. The integration of these dimensions provides a more comprehensive approach to developing listening competence than the isolated use of individual applications, thereby offering both theoretical contributions to technology-enhanced language learning and practical guidance for Arabic language educators seeking to design more effective, evidence-based, and learner-centered *maharah istima'* instruction.

D. Conclusion

This study demonstrates that Spotify, Voicemaker, and Quizalize provide complementary pedagogical contributions to the development of *maharah istima'* in Arabic language learning rather than functioning as interchangeable digital learning applications. The comparative analysis based on the ISO 9126 quality framework indicates that each platform possesses distinctive strengths aligned with different instructional purposes. Spotify contributes primarily by providing authentic listening

input through podcast-based learning, thereby strengthening learners' exposure to naturally occurring Arabic discourse. Voicemaker supports the production of adaptive and customizable listening materials through AI-based *text-to-speech* technology, enabling teachers to tailor instructional audio according to learners' proficiency levels. In contrast, Quizalize enhances formative assessment by integrating listening activities with interactive quizzes, immediate feedback, and learning analytics that promote learner engagement and continuous monitoring of listening comprehension.

Beyond identifying the individual strengths of each application, this study contributes to the growing discourse on technology-enhanced Arabic language learning by proposing a comparative pedagogical perspective. Rather than evaluating digital applications independently, the findings demonstrate that authentic audio exposure, AI-assisted audio production, and interactive assessment represent interconnected stages within an integrated *maharah istima'* learning process. This perspective extends previous studies that have predominantly examined Spotify, Voicemaker, or Quizalize separately by illustrating how their complementary functions can be strategically combined to create a more coherent, adaptive, and learner-centered instructional model.

From a practical perspective, the findings provide empirical guidance for Arabic language educators in selecting and integrating digital learning media according to specific instructional objectives. Spotify may be employed to strengthen authentic listening exposure, Voicemaker to produce controlled instructional audio, and Quizalize to facilitate formative assessment and immediate feedback. Such integration enables teachers to design more flexible and evidence-based listening instruction while maximizing the pedagogical potential of AI-supported educational technologies.

This study is subject to several limitations. The analysis focused exclusively on three digital applications and relied on qualitative comparative observation using the ISO 9126 framework. Consequently, the findings primarily explain pedagogical characteristics and technological affordances rather than measuring learning effectiveness through experimental implementation. Future research may extend this work by incorporating classroom-based interventions, learner performance data, and quantitative or mixed-method approaches to evaluate the impact of integrated digital learning ecosystems on the development of *maharah istima'* across different educational contexts and learner proficiency levels.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Bibliography

- Abd Ghani, A. R., Huda, M., Sholihah, M., Tabrani, Z. A., & Hussin, H. (2025). Tahfiz (Memorization Sciences) Curriculum Practice: An Empirical Study from Private School in Johor, Malaysia. *Nazhruna: Jurnal Pendidikan Islam*, 8(1), 233–245. <https://doi.org/10.31538/nzh.v8i1.265>
- Abd Ghani, A. R., Huda, M., Sholihah, M., Tabrani, Z. A., & Hussin, H. (2025). Tahfiz (Memorization Sciences) Curriculum Practice: An Empirical Study from Private School in Johor, Malaysia. *Nazhruna: Jurnal Pendidikan Islam*, 8(1), 233–245. <https://doi.org/10.31538/nzh.v8i1.265>
- Azmi, F. Al, Muassomah, Amalia, N. N., & Diana, N. (2023). The Use of Quizizz as Inductive-based Nahwu Learning Media in the Digital Age. *Lisanudhad: Jurnal Bahasa, Pembelajaran Dan Sastra Arab*, 10(1), 54–73. <https://doi.org/http://dx.doi.org/10.21111/lisanudhad.v10i01.9186>
- Fadhilah, R. (2024). *Pengembangan Media Podcast Spotify Dalam Pembelajaran Menyimak Teks Cerita Rakyat Pada Siswa Kelas VII SMP Negeri 24 Palembang*. Universitas Sriwijaya.
- Fairuza Mumtaz, & Maman Abdurrahman. (2022). Pembelajaran Maharah Al-Istima' Menggunakan Media Podcast pada Aplikasi Spotify. *Jurnal Pendidikan Bahasa*, 12(2), 41–45. <https://doi.org/10.37630/jpb.v12i2.1005>
- Fatoni, A. K., & Ainiyah, N. (2024). Pemanfaatan Media Pembelajaran Berbasis Platform Quizalize Dalam Pembelajaran Bahasa Arab Siswa di Madrasah Tsanawiyah Negeri 2 Bolaang Mongondow. *Jurnal Al-Mashadir PBA IAIN Manado*, 4(1), 33–47.
- Fauzan, A., & Hartati, S. (2018). Text to Speech untuk Bahasa Arab Menggunakan Perangkat Diphone. *JUITA: Jurnal Informatika*, 6(1), 9. <https://doi.org/10.30595/juita.v6i1.1787>
- Fitri, A. N., Zoelvi, N. I., & Hadriana, H. (2024). Systematic Literature Review: The Use of English Song on Spotify Application in Learning English. *Scope: Journal of English Language Teaching*. <https://doi.org/10.30998/scope.v9i1.21780>
- Hamid, M. A., & Husein, S. (2024). *Desain Bahan Ajar Bahasa Arab Berbasis Digital Teori dan Praktik* (I. A. Rokhman (ed.); 1st ed.). Insight Mediatama.

- Jantakoon, T., Jantakun, T., Jantakun, K., Pongpanich, W., Pasmala, R., Wannapiroon, P., & Nislook, P. (2025). The Effectiveness of Artificial Intelligence in English Instruction for Speaking and Listening Skills : A meta-analysis. 17(4).
- Nanda, M. P., Riswanto, S., & Kurniawati, M. (2023). Metode Paired Comparison Pada Pekerjaan Pondasi Bangunan Gedung Dengan Pendekatan Studi Value Engineering (Ve). *JMTS: Jurnal Mitra Teknik Sipil*, 6(2), 449–456. <https://doi.org/10.24912/jmts.v6i2.23387>
- Nasution, S., Asari, H., Al-Rasyid, H., Faridah, F., Zulpina, Z., Rangkuti, R. U., & Kawaid, A. I. S. D. (2025). Arabic Learning and Religious Identity among Non-Muslim Students in Indonesia. *Jurnal Ilmiah Peuradeun*, 13(2), 1497–1526. <https://doi.org/10.26811/peuradeun.v13i2.2053>
- Nurhidayati, N., Maksum, A., Alfian, M., Machmudah, U., Zulkifli, M., & Ismail, B. (2020). Effectiveness of Problem-Based Learning Model (PBL) to Improve Listening Skill in Arabic Language Courses. 446(Iclic 2019), 134–140.
- Padilah, Y. M., & Budiarti, M. (2023). Development of Podcast Media on Spotify Application for Learning Maharah Al-Istima' Class VIII MTs An-Nizomiyah Tebo Jambi Students. *Proceedings of Imam Bonjol International Conference on Islamic Education*, 4(2), 572–578.
- Rachmawati, M., Fahmi, A. K., & Sirait, A. (2023). Reviewing Listening Arabic Skill using the Quizalize Application. *Izdihar : Journal of Arabic Language Teaching, Linguistics, and Literature*, 6(1), 77–90. <https://doi.org/10.22219/jiz.v6i1.25261>
- Rahmah, L. A., & Ahsanuddin, M. (2022). Pengembangan Media Podcast pada Aplikasi Spotify sebagai Media Pembelajaran Maharah al- Istima'. *JoLLA: Journal of Language, Literature, and Arts*, 2(11), 1613–1625. <https://doi.org/10.17977/um064v2i112022p1613-1625>
- Rekan, A. A., Howell, H. R., Salleh, M. N. M., Rosin, N., Tabrani, Z. A., Ma`arif, M. A., & Adnan, M. A. M. (2025). Arabic Language Curriculum as a Foundation for Strengthening Religious Education in Public Higher Education. *Jurnal Pendidikan Agama Islam*, 22(1), 97–121. <https://doi.org/10.14421/jpai.v22i1.11340>
- Rekan, A. A., Howell, H. R., Salleh, M. N. M., Rosin, N., Tabrani, Z. A., Ma`arif, M. A., & Adnan, M. A. M. (2025). Arabic Language Curriculum as a Foundation for Strengthening Religious Education in Public Higher Education. *Jurnal Pendidikan Agama Islam*, 22(1), 97–121. <https://doi.org/10.14421/jpai.v22i1.11340>
- Ritonga, M., Mudinillah, A., Ardinal, E., Tauhid, T., & Nurdianto, T. (2024). Enhancing Arabic Language Learning in Higher Education: Leveraging E-Campus as an

- Online Learning and Evaluation Platform. *Jurnal Ilmiah Peuradeun*, 12(2), 491-516. <https://doi.org/10.26811/peuradeun.v12i2.1103>
- Rosyad, M. S. (2022). أنموذج (Voicemaker): تصميم اختبارات اللغة العربية في ضوء الذكاءات الاصطناعية (Toafl). *Insyirah: Jurnal Ilmu Bahasa Dan Studi Islam*, 5(1), 1-16.
- Salsabila, W., Irianti, L., & Thoyyibah, L. (2021). The Effectiveness Of Georgia Na ' S Podcast On Spotify To Improve Students ' Listening Skills.
- Saputra, M. A. W., Riuditama, W. A., Setyowati, H., & Yaqin, M. A. (2021). Survei Teknik-Teknik Pengukuran Kualitas Perangkat Lunak. *ILKOMNIKA: Journal of Computer Science and Applied Informatics*, 3(1), 11-29. <https://doi.org/10.28926/ilkomnika.v3i1.38>
- Sarif, S., & AR, A. (2024). Efektivitas Artificial Intelligence Text to Speech dalam Meningkatkan Keterampilan Membaca. *Jurnal Naskhi Jurnal Kajian Pendidikan Dan Bahasa Arab*, 6(1), 1-8. <https://doi.org/10.47435/naskhi.v6i1.2697>
- Usman, S. Al. (2023). *Pengembangan Media Audio Visual Podcast Pembelajaran Bahasa Arab (Mahārah Al Istimā') di Pesantren Mahasiswa KH. Ahmad Dahlan Yogyakarta*. Universitas Islam Negeri Sunan Kalijaga Yogyakarta.
- Wahida, B. (2021). Pengembangan Teknologi Audio dalam Pembelajaran Bahasa Arab. *Al Waraqah*, 1(1), 24-40. <https://jurnal.iain-bone.ac.id/index.php/alwaraqah/article/view/1025>
- Yusuf Al-Ayubi, S., Sudarmadi Putra, & Mokodenseho, S. (2023). Penggunaan Metode Audiolingual dalam Maharah Istima' di Madrasah Tsanawiyah Al-Kahfi Hidayatullah Surakarta. *Journal of Education Research*, 4(4), 1839-1845. <https://doi.org/10.37985/jer.v4i4.530>