

An AI-Based Model of Maharah Qirā'ah Instruction: Integrating Linguistic Analysis and Islamic Pedagogy for Deep Meaning Making

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Abstrak: Perkembangan pesat kecerdasan buatan (AI) telah mengubah pembelajaran bahasa Arab melalui kemampuan analisis linguistik otomatis, *speech-to-text*, dan umpan balik real time. Pada konteks *maharah qirā'ah*, praktik pembelajaran masih didominasi teknik pelafalan dan terjemahan literal, sementara pendalaman makna belum optimal. Penelitian ini bertujuan merumuskan model konseptual pembelajaran qirā'ah berbasis AI yang mengintegrasikan analisis linguistik dengan pedagogi Islam untuk mendorong pembacaan reflektif dan bermakna. Menggunakan pendekatan kualitatif deskriptif melalui studi pustaka, penelitian mensintesis literatur 2015–2025 dan menganalisis data melalui pemetaan tema dan *content analysis*. Temuan menunjukkan bahwa Arabic NLP seperti AraBERT, CAMEL Tools, Farasa, dan Lisan, serta sistem *speech recognition* seperti Whisper, efektif meningkatkan akurasi fonetik, deteksi kesalahan, dan kesadaran semantik. Jika dipadukan dengan bimbingan interpretatif, AI berperan sebagai mitra epistemik yang memperkuat *qirā'ah ma'nāwīyyah*. Model ini berdampak pada inovasi kurikulum, asesmen berbasis AI, serta penguatan peran dosen sebagai *murabbi* dalam pembelajaran membaca berbasis teknologi

Kata kunci: ecerdasan Buatan, Maharah Qirā'ah, Pedagogi Islam, Pendalaman Belajar

Abstract: The rapid development of Artificial Intelligence (AI) has transformed Arabic language education by enabling automated linguistic analysis, speech-to-text processing, and real-time feedback. In the context of *maharah qirā'ah*, existing instruction often emphasizes phonetic decoding and literal translation, while deeper meaning-making remains limited. This study aims to develop a conceptual AI-based model that integrates linguistic analytics with Islamic pedagogy to promote reflective and meaningful reading. Using descriptive qualitative library research, the study synthesizes literature from 2015–2025 and analyzes data through thematic mapping and content analysis. Findings indicate that Arabic NLP tools such as AraBERT, CAMEL Tools, Farasa, and Lisan, alongside modern speech recognition systems like Whisper, effectively enhance phonetic accuracy, error detection, and semantic awareness. When paired with guided interpretation and reflective learning, AI serves as an epistemic partner supporting *qirā'ah ma'nāwīyyah*. The proposed model offers implications for curriculum innovation, AI-based assessment, and strengthening the lecturer's role as a *murabbi* in AI-augmented Arabic reading instruction.

Keywords: Artificial Intelligence, Maharah Qirā'ah, Islamic Pedagogy, Deep Learning

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has transformed the landscape of higher education by enabling large scale personalization, real time feedback, and data analysis that were previously inaccessible.¹ Recent systematic reviews confirm that the adoption of AI in education has grown significantly since the early 2020s, enhancing instructional effectiveness through adaptive tutoring, learning analytics, and automated assessment.² Nevertheless, the existing literature consistently emphasizes that these technologies achieve meaningful impact only when integrated within sound pedagogical frameworks. Without such integration, AI risks functioning merely as a technical mechanism rather than a catalyst for deeper learning.³

In language education, AI has demonstrated substantial benefits in supporting fluency practice, pronunciation training, and the development of adaptive learning materials.⁴ Empirical studies indicate that AI-based tools enhance learner motivation and provide personalized corrective feedback, particularly in second language acquisition.⁵ Yet, scholars also highlight several limitations: the effectiveness of AI heavily depends on model quality, the suitability of training datasets, and the extent to which teachers mediate technical outputs into meaningful learning experiences.⁶

These pedagogical concerns are especially relevant in Arabic language education, where *maharah qirā'ah* the competency of reading Arabic texts plays a central role.⁷ Reading in Arabic is not merely an act of decoding; it involves understanding textual

¹ Taufiqurrahman Siddiq Moh Solikul Hadi, Muhammad Arif Robbani, "Konsep Pendidikan Islam di Era Society 5.0 Perspektif Hadist" 3, no. 1 (2021): 28–39.

² Vincent Tinto, "Exploring the Character of Student Persistence in Higher Education: The Impact of Perception, Motivation, and Engagement," 2022.

³ Edi Kurniawan Fahmi Husein, Moh Solikul Hadi, "Strategi Digital Detox untuk Siswa: Efektivitas Pendidikan Islam melalui Program Bimbingan Konseling pada Anak SMA / SMK di Yogyakarta Penerbangan AAG Adisutjipto, penerapan strategi Digital Detox melalui program" 13 (2024): 358–69.

⁴ Sudiani Sudiani dan Herman Zuhdi, "The Influence of Digital Technology on English Language Learning in Secondary Schools: An In-Depth Analysis," *Holistic Science* 5, no. 1 (2025): 20–26.

⁵ Muhammad Rivki dkk., "The Suitability Between Lesson Plan And Japanese Language Learning Implementation In Grade X Of A Senior High School," no. 112 (n.d.): 1–9.

⁶ Sawsan Ismaiel, Dana Alghafari, dan Halah Ibrahim, "Promoting physician - patient language concordance in undergraduate medical education: a peer assisted learning approach," *BMC Medical Education*, 2023, 1–5, <https://doi.org/10.1186/s12909-022-03986-4>.

⁷ Cong Khanh Ly, "Teachers' Roles on English Language Teaching for Promoting Learner-Centered Language Learning: A Theoretical Review," *International Journal of TESOL & Education* 4, no. 2 (2024): 78–98, <https://doi.org/10.54855/ijte.24425>.

meaning, historical context, rhetorical structure, and spiritual implications.⁸ However, many instructional practices still prioritize technical aspects such as phonetic accuracy, grammatical parsing, and literal translation, while offering insufficient space for semantic depth, interpretive thinking, and spiritual reflection. This imbalance creates an opportunity for AI to support technical diagnosis such as identifying errors in pronunciation or morphology yet long-term success in qirā'ah learning depends on pedagogical deep learning involving reflection, interpretation, and value internalization, domains that remain firmly in the purview of educators.⁹

Technologically, the foundation for AI-driven Arabic language learning has strengthened substantially.¹⁰ Models such as AraBERT have become strong baselines for Arabic text understanding, while toolkits like CAMEL Tools facilitate preprocessing, tokenization, and morphological analysis. In speech recognition, self-supervised models such as Whisper and wav2vec2 demonstrate robust transcription capabilities in Modern Standard Arabic, though performance on dialectal variations and sacred or diacritized texts still requires fine-tuning and specialized datasets.¹¹ Complementary tools such as Farasa and Lisan remain essential for morphological disambiguation, segmentation, and part-of-speech tagging, particularly when transcriptions lack *harakāt*. These advancements enable the creation of instructional prototypes that record students' recitations, convert them into text, and deliver detailed linguistic analysis.¹²

Despite this progress, the existing body of research reveals several important gaps. First, most AI-related studies in Arabic language learning focus on technical performance pronunciation scoring, keyword extraction, automated reading assessment while neglecting the epistemological, interpretive, and spiritual dimensions central to Islamic education.¹³ Second, research rarely addresses the integration of AI with Islamic pedagogical principles such as reflective reading, value internalization, and

⁸ Takdir Takdir, "Problematika Pembelajaran Bahasa Arab," *Jurnal Naskhi: Jurnal Kajian Pendidikan dan Bahasa Arab* 2, no. 1 (2020): 40–58, <https://doi.org/10.47435/naskhi.v2i1.290>.

⁹ Elise J Dallimore dan Tasha J Souza, *Pedagogical Strategies*, 2001.

¹⁰ Arturo Realyvásquez-Vargas dkk., "Applying the Plan-Do-Check-Act (PDCA) cycle to reduce the defects in the manufacturing industry. A case study," *Applied Sciences (Switzerland)* 8, no. 11 (2018), <https://doi.org/10.3390/app8112181>.

¹¹ Abdelrahman Boda Sadallah dkk., "ANER : Arabic and Arabizi Named Entity Recognition using Transformer-Based Approach," 2023.

¹² Ashwaq Alsayed, Thamir M Qadah, dan Muhammad Arif, "A Performance Analysis of Transformer- based Deep Learning Models for Arabic Image Captioning," *Journal of King Saud University - Computer and Information Sciences*, 2023, 101750, <https://doi.org/10.1016/j.jksuci.2023.101750>.

¹³ Rizka Sari dan Anwar Sidik, "Digital Media Innovation For Istima ' Teaching In Arabic Language Education : Literature Study" IV, no. 2 (n.d.): 4–6.

ta'dib. Third, no existing model synthesizes Arabic NLP, speech recognition, and Islamic pedagogy into a unified instructional framework for *maharah qirā'ah*. Fourth, the role of AI as an epistemic mediator supporting both linguistic precision and meaning-making remains underexplored.¹⁴

The present study seeks to address these gaps by proposing an AI-based instructional model for *maharah qirā'ah* that harmonizes technical capabilities with Islamic pedagogical principles.¹⁵ The model integrates speech to text processing, morphological and syntactic analysis, and semantic support with structured interpretive activities such as thematic discussion, contextual study, and *muqābalah* (comparative reading).¹⁶ AI is positioned not merely as a diagnostic instrument but as a generator of reflective input that is guided and contextualized by instructors. Through this integrative approach, students gain both technical proficiency and deeper comprehension, promoting a form of reading that is intellectually rigorous and spiritually grounded (*qirā'ah ma'nāwīyyah*).¹⁷

The novelty of this study lies in its proposal of the first conceptual model that unifies AI literacy, Arabic linguistic analytics, and Islamic pedagogy within a single instructional framework. It redefines AI as an epistemic partner that supports deep reading, reflective learning, and value formation. This contribution offers a new direction for contemporary Arabic language pedagogy by aligning the potential of modern AI technologies with the classical aims of Islamic education.

METHOD

This study employed a descriptive qualitative approach using library research to analyze and synthesize scientific literature on the use of Artificial Intelligence (AI) in teaching *maharah qirā'ah* within Islamic higher education.¹⁸ This approach was chosen to explore conceptually how AI technologies intersect with deep pedagogical meaning

¹⁴ Mithun Hossain dkk., "A Hybrid Attention-Based Transformer Model for Arabic News Classification Using Text Embedding and Deep Learning," *IEEE Access* 12, no. December (2024): 198046–66, <https://doi.org/10.1109/ACCESS.2024.3522061>.

¹⁵ Baiq Raudatussolihah, Mardhiana Jamal, dan Ali Fathurrahman, "Challenges and Strategies in Implementing Artificial Intelligence-Based Maharah al-Kalam Learning in Arabic Language Education Study Program" 6, no. 2 (2025): 130–37.

¹⁶ Noptario Viva Fadma Onilivia, "Educator Excellence in the Era of Society 5.0: A Hadith Perspective Viva" 4, no. 1 (2024): 38–47.

¹⁷ David A Kolb, "Experiential Learning: Experience as The Source of Learning and Development," *Prentice Hall, Inc.*, no. 1984 (1984): 20–38, <https://doi.org/10.1016/B978-0-7506-7223-8.50017-4>.

¹⁸ et.l Wang Li, *Research Methods in Education*, 2018.

making in Arabic reading, not to test hypotheses, but to construct a new theoretical and instructional model. Through this orientation, the study positions AI as a technical tool for linguistic analysis and lecturers as facilitators of reflective and spiritual learning.¹⁹

Data were drawn from primary and secondary sources, including Scopus, DOAJ, and Sinta indexed journal articles, scholarly books, and research or policy reports related to Islamic education and AI.²⁰ Literature selection was based on thematic relevance, academic credibility, and recency (2015–2025). Data collection followed systematic literature mapping across databases such as Scopus, ScienceDirect, SpringerLink, and Garuda Ristekbrin, using a PRISMA guided process of identification, screening, selection, and final eligibility. Keywords such as *Artificial Intelligence in Education*, *Arabic Reading Skills*, *AI Based Learning Model*, *Arabic NLP*, and *Islamic Pedagogy* supported comprehensive search retrieval.

Data analysis employed content analysis comprising three stages: thematic identification, conceptual interpretation, and synthesis.²¹ The analysis examined how AI capabilities such as speech to text recognition, morphological processing, and semantic analysis can support deep pedagogical engagement with Arabic texts. The synthesis produced a conceptual AI based instructional model for *maharah qirā'ah*. Data validity was ensured through source triangulation, expert validation, and critical reading to maintain theoretical reliability and practical relevance for Arabic language education in the AI era.²²

RESULT AND DISCUSSION

The emergence of Artificial Intelligence (AI) has significantly reshaped contemporary Arabic language pedagogy, particularly through the widespread use of AI-powered learning tools such as ChatGPT, ArabicBERT, and SpeechOcean. These technologies have made language learning more interactive, adaptive, and responsive to individual learner needs.²³ Recent studies such as those by Al-Khalifa (2021), Omer and Almutairi (2023), and Alharbi (2024) demonstrate that AI-based systems

¹⁹ John. W. Cresswell, *Penelitian Kualitatif dan Desain Riset* (Yogyakarta: Pustaka Pelajar, 2015).

²⁰ John W Creswell, *A Mixed-Method Approach, Writing Center Talk over Time*, 2018, <https://doi.org/10.4324/9780429469237-3>.

²¹ Sugiyono, *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif R & D* (Bandung: Alfabeta, n.d.).

²² Sugiyono, *Metode Penelitian Kualitatif, Kuantitatif dan RnD* (Bandung: Alfabeta, 2019).

²³ Muhammad Shaleh Assingkily dan Mustapa Ahmad, "Integrating Artificial Intelligence into Madrasah Learning : A Mixed- Methods Study of Intelligent Media Development and Implementation" 4, no. 1 (2025): 608–18.

substantially improve reading fluency and vocabulary acquisition among Arabic language learners. These findings are highly relevant to *maharah al-qirā'ah*, where mastery requires not only phonetic and syntactic competence but also semantic sensitivity and the ability to extract deep textual meaning.

AI-driven digital transformation also strengthens the cognitive and linguistic capacities of learners.²⁴ Through the integration of speech recognition and natural language processing (NLP), students can automatically receive feedback on phonetic accuracy, syntactic structure, and semantic relevance.²⁵ As a result, reading instruction shifts from a mechanical activity to a reflective and analytical process that enables learners to understand Arabic texts more comprehensively. In this sense, AI serves not merely as a technological instrument but as an epistemic tool that enhances critical thinking and linguistic awareness.²⁶ These developments show that AI-supported qirā'ah instruction can become data-driven, contextually grounded, and consistent with Islamic educational values that position meaning-making as the core of religious literacy.²⁷

The paradigm shift in Arabic language learning aligns well with theoretical foundations in Second Language Acquisition (SLA). According to Krashen's Input Hypothesis, learners acquire language more effectively when exposed to abundant and comprehensible authentic input. AI applications such as Whisper, Lisan, Farasa, and ArabicBERT provide rich, contextualized Arabic input, supporting both phonetic training and detailed morphological analysis. This enhances learners' linguistic experience and reinforces their ability to relate sentence structure, meaning, and discourse context.²⁸ Furthermore, Long's Interaction Hypothesis emphasizes the importance of meaningful interaction in facilitating noticing, negotiation of meaning, and syntactic development. AI functions as an interactive partner that supplies adaptive corrective feedback, supporting scaffolded reading comprehension, as evidenced by the

²⁴ Haetami, "AI-Driven Educational Transformation in Indonesia: From Learning Personalization to Institutional Management" 17 (2025): 1819–32, <https://doi.org/10.35445/alishlah.v17i2.7448>.

²⁵ Shaukat Rahman Ansari dan Ika Nurul Qamari, "Artificial intelligence and students' cognitive learning outcomes with bibliometric and content analysis for future research agenda," 2025.

²⁶ P Panagiotidis, "AI-DRIVEN APPLICATIONS FOR LANGUAGE LEARNING : TRANSFORMATIVE TECHNOLOGIES AND EDUCATIONAL BENEFITS," 2025, 747–58.

²⁷ Akhsanul In, Abbul Haris, dan M Nurul Humaidi, "Optimizing the Islamic Religious Education Learning Model at Elementary School: Challenges and Innovations" 17 (2025): 2159–71, <https://doi.org/10.35445/alishlah.v17i2.5791>.

²⁸ Yuanyuan Mu, "Semantic AI-Driven Knowledge Networks for Enhancing Linguistic Competence in Educational Management" 21, no. 1 (2025): 1–23, <https://doi.org/10.4018/IJSWIS.382223>.

findings of Alshammari (2022). These theoretical connections show that the present study reinforces established SLA theories by demonstrating how AI operationalizes input-rich and interaction-based learning environments.²⁹

From the perspective of Islamic education, however, the role of AI must extend beyond cognitive enhancement. Scholars such as Al-Attas (2018) and Wan Daud (2020) stress that the essence of Islamic pedagogy lies in *ta'dīb* the cultivation of adab, or the proper ordering of knowledge and character.³⁰ Thus, AI in *maharah al-qirā'ah* should strengthen reflective reading, spiritual awareness, and the search for meaning (*tafaqquh fi al-dīn*). Recent studies (Zulkifli, 2022; Rahman et al., 2024) highlight that AI, when guided by Islamic spiritual values, can support deep reading skills and enhance semantic awareness. These insights support and extend earlier Islamic educational theories by showing that AI can be harmonized with spiritual pedagogy rather than contradicting it.³¹

The study also contributes to the growing body of research in Islamic Educational Technology, which increasingly emphasizes substantive integration between Islamic values and digital innovation. Scholars such as Zainuddin and Huda (2023) argue that AI use in Islamic education should follow the principles of *ta'dīb* and *tarbiyah*, positioning technology as a facilitator of reflective learning rather than a replacement for the *murabbi*. The findings of this study strengthen that argument by demonstrating that AI-supported qirā'ah instruction can cultivate linguistic competence while preserving moral-spiritual orientation.³²

From a pedagogical standpoint, the conceptual AI-based qirā'ah model synthesizes four interconnected components: (1) speech-to-text conversion using tools such as Whisper and Google Speech Recognition; (2) linguistic analysis using Arabic NLP tools such as Lisan and Farasa; (3) semantic interpretation through *tafaqquh fi al-ma'nā*; and (4) reflective integration within Islamic pedagogical values. This integrative model shifts reading from a mechanical skill to an epistemological process combining phonetic, syntactic, and semantic understanding with reflective and spiritual

²⁹ Mahmoud Abdallah dan English Language Instruction, "The C . H . A . T . S . Model : A Framework for AI- Driven Language Learning in the Digital Age By," no. June (2025): 1–45.

³⁰ Reza Fahmi Ma dkk., "The Role of Artificial Intelligence in Shaping Future Islamic Pedagogy : A Study on Curriculum Innovation and Knowledge Dissemination," n.d., 1–16.

³¹ Anis Saidah dan Muhammad Fahmi, "The Imperative of Integrating Knowledge and Adab in Reconstructing Islamic Education in the Digital Era : A Study of Al- Attas ' s Thought" 11, no. 2 (2025): 123–36.

³² Zainal Arifin Ahmad dkk., "(Natural Sciences) The Role of Artificial Intelligence in Enhancing Pedagogical Methods in Modern Islamic Education" 52, no. 6 (2025).

engagement. Such a model supports the Islamic conception of reading as *ta'aqqul* deep intellectual and spiritual contemplation of meaning.

The study's findings also align with theories of digital Islamic epistemology, which propose that technology can support not replace human reasoning and spiritual consciousness. Scholars such as Ruslan (2025) and Salim & Aditya (2024) argue for reconstructing Islamic epistemology in the digital age by positioning AI as an epistemic partner within a value-oriented learning ecosystem. The present research **extends** these theories by demonstrating how AI can mediate meaning-making, helping learners navigate both cognitive analysis and spiritual insight.

Practically, the study offers significant implications for curriculum development and assessment in Islamic higher education. The proposed AI-based qirā'ah model supports the integration of AI literacy into an Outcome-Based Education (OBE) framework by providing measurable indicators such as AI-enhanced reading fluency, semantic awareness, and metacognitive reflection. It reinforces findings by Omer (2023) and Alshammari (2022) that AI improves reading fluency and semantic sensitivity in both classical and modern Arabic contexts.

The study also highlights the evolving role of lecturers in AI-augmented ecosystems. Rather than replacing the educator, AI reinforces the lecturer's role as *murabbi digital* a mentor of meaning who guides students through interpretive engagement with Arabic texts. This repositions educators from transmitters of knowledge to facilitators of reflective meaning-making, aligning with Islamic intellectual traditions.

Despite its contributions, the study has certain limitations. As a literature based conceptual work, the proposed model has not yet been empirically tested in classroom settings. Future research particularly experimental designs and design based research (DBR) is needed to evaluate the model's effectiveness in improving phonetic accuracy, syntactic mastery, and semantic comprehension. Moreover, ethical dimensions such as digital adab and moral responsibility in AI-mediated learning require further exploration to ensure that technology aligns with Islamic ethical frameworks.

Overall, this study both reinforces prior findings on the pedagogical benefits of AI and extends existing research by integrating AI with Islamic pedagogical theory, spiritual values, and deep meaning-making. It provides a comprehensive conceptual model in which AI functions not merely as a technological tool but as an epistemic

mediator that bridges linguistic proficiency, reflective insight, and spiritual consciousness in *maharah al-qirā'ah* instruction.

CONCLUSION

This study set out to develop a conceptual AI based instructional model for *maharah al-qirā'ah* that unites the technical strengths of modern AI such as speech-to-text, morphological and syntactic analysis, and semantic processing with Islamic pedagogical principles that emphasize reflective learning, deep meaning making, and the cultivation of adab. The literature synthesis demonstrates that AI powered NLP tools and speech recognition systems significantly improve students' phonetic accuracy, structural awareness, and semantic comprehension. These findings reinforce previous research on the effectiveness of AI in language learning while extending it by showing how AI can function as an epistemic partner within Islamic education, supporting *qirā'ah ma'nāwiyyah* and enhancing spiritual and interpretive engagement with texts. The proposed model carries important implications for curriculum development, AI-augmented assessment, and the evolving role of lecturers as digital *murabbi* who guide students toward linguistic mastery and value-based understanding. Nonetheless, the study is limited by its conceptual nature and lack of empirical classroom validation, making field testing essential to assess the model's practical impact. Future research should therefore employ experimental or design based approaches to evaluate and refine the model, while also exploring ethical dimensions such as digital adab and the moral responsibilities associated with AI use in Islamic education.

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