




Digital Literacy and Islamic Education: Strengthening Technological Self-Efficacy through Artificial Intelligence for Language Learning in Islamic Higher Education

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Abstract

This study aims to explore the integration of digital literacy and Islamic education by enhancing technological self-efficacy through artificial intelligence (AI) in language learning at Universitas Muhammadiyah Enrekang. Using a qualitative-descriptive method, data were collected through interviews, observations, and document analysis involving students and lecturers in Islamic higher education. The research found that the use of AI-based tools—such as language learning apps, intelligent tutoring systems, and speech recognition technologies—significantly improved students' engagement, motivation, and confidence in using English in Islamic contexts. Additionally, integrating Islamic values within digital platforms created a more meaningful learning environment. The findings underscore the importance of equipping students with both digital skills and religious understanding to navigate modern challenges. The study concludes that AI-driven language learning not only strengthens technological self-efficacy but also fosters a holistic educational model that aligns with the mission of Muhammadiyah to promote progressive Islamic education in the digital era.

Keywords: *Islamic education; language learning, AI-based tools; Higher education; digital literacy*

Introduction

The rapid development of digital technology (Khoiroh, 2023) has transformed the landscape of education, particularly in higher education institutions (Affandi et al., 2021). In Islamic higher education, this transformation presents both opportunities and challenges, especially in integrating technological advancements with religious values (Mubiarto, 2024). One area that has gained increasing attention is the role of digital literacy and artificial intelligence (AI) in language learning. As English proficiency becomes more essential for accessing global knowledge and scholarly discourse, Islamic institutions must adapt by embedding digital innovations into their educational framework without compromising their religious mission (Mubiarto, 2024).

Universitas Muhammadiyah Enrekang (UNIMEN), as part of the Muhammadiyah educational movement, seeks to align progressive Islamic education

with 21st-century competencies. This study explores how digital literacy, when integrated with Islamic education, can enhance students' technological self-efficacy—specifically through AI-based tools designed for language learning (Muttaqin, 2022). These tools include intelligent tutoring systems, speech recognition software, and adaptive language learning platforms. The research focuses not only on the pedagogical outcomes but also on how Islamic values can be embedded within digital learning environments to foster holistic character development (Salsabila, 2019).

Given the growing need for effective digital integration, this study adopts a qualitative-descriptive method to examine student and lecturer experiences in implementing AI in English language learning at UNIMEN. By exploring how AI tools influence motivation, engagement, and confidence, the study aims to contribute to a model of Islamic higher education that is technologically adept, pedagogically sound, and spiritually grounded (Arif & Aziz, 2025).

Method

This study employed a qualitative-descriptive research design to explore how digital literacy and artificial intelligence (AI) tools influence language learning within the context of Islamic education at Universitas Muhammadiyah Enrekang (UNIMEN). The qualitative approach was chosen to gain an in-depth understanding of participants' experiences, perceptions, and responses toward the integration of AI in English language instruction.

Data collection involved three primary techniques: semi-structured interviews, classroom observations, and document analysis. Interviews were conducted with English language lecturers and students enrolled in Islamic higher education programs, focusing on their use of AI-based tools such as speech recognition applications, intelligent tutoring systems, and adaptive learning platforms (Rahayu et al., 2023). Classroom observations provided insights into real-time interactions and engagement with these technologies. Additionally, relevant institutional documents and digital learning materials were reviewed to assess the integration of Islamic values into digital content (Setiawan, 2019).

The collected data were analysed thematically, allowing the researchers to identify recurring patterns and significant themes related to technological self-efficacy, student motivation, and the harmony between digital literacy and Islamic educational values. This methodological approach facilitated a contextualized exploration of how AI-enhanced learning supports both academic and spiritual development in Islamic higher education settings.

Results and Discussion

This section presents the key findings of the study based on data collected through interviews, observations, and document analysis. Thematic analysis yielded four major themes: (1) Enhancement of Technological Self-Efficacy, (2) Increased Learner Engagement and Motivation, (3) Integration of Islamic Values in AI Tools, and (4) Pedagogical Challenges and Institutional Readiness. Each theme is discussed in detail, supported by quotes from participants and visual representations of the data.

3.1. Enhancement of Technological Self-Efficacy

One of the most prominent findings was the significant increase in students’ technological self-efficacy through their consistent exposure to AI tools in the language learning process (Abdullah, n.d.). Most students initially expressed hesitance in using AI applications such as voice recognition, grammar-checking systems, or interactive AI tutors. However, as they became more familiar with these tools, their confidence in navigating digital platforms for educational purposes grew substantially (Ramadan, 2024).

Table 1 below summarizes the self-assessed technological confidence levels of student participants before and after the implementation of AI-assisted learning tools.

Table 1. Self-Assessed Technological Confidence Levels

Source: Field Data, 2025

Category	Pre-Implementation (%)	Post-Implementation (%)
Very Confident	15%	55%
Moderately Confident	30%	35%
Slightly Confident	40%	10%
Not Confident	15%	0%

Students reported that the feedback and interactive nature of AI tools encouraged experimentation and active use. Aligns (Nurdiansyah & Naseh, 2023) showed that self-efficacy, which suggests that mastery experiences are a key source of confidence. The majority of respondents indicated that their ability to complete digital tasks independently increased after exposure to AI-driven environments.

3.2. Increased Learner Engagement and Motivation

Another major finding was the improvement in learner engagement and motivation. AI tools such as Duolingo, Google AI Translate, and Quizlet Live—when customized to Islamic content—created dynamic, gamified experiences that made language learning more enjoyable. In-class observations supported this, showing higher levels of participation during AI-assisted activities compared to traditional grammar drills or textbook-based exercises (Muchlis et al., 2022).

3.3. Integration of Islamic Values in AI Tools

A distinctive aspect of this study was examining how Islamic values could be maintained or embedded in AI-driven environments . This was crucial for ensuring that the digital transformation did not dilute the spiritual essence of Islamic education (Nurdiansyah & Naseh, 2023). The research found several strategies to support this integration:

- 1. **Islamic-themed content:** Customizing AI flashcards and quizzes with Qur’anic vocabulary or hadith examples made the material more relevant.
- 2. **Digital adab (etiquette):** Students were guided on ethical AI usage, including maintaining sincerity (ikhlas), avoiding cheating, and using AI as a tool, not a shortcut.
- 3. **Prayer and reflective moments:** Incorporating reminders within learning modules to pause for prayer or reflection reinforced spiritual routines.

Lecturers played a key role in this contextualization. One lecturer stated: “We encourage students to remember that knowledge is a form of ibadah. Even when using AI, they must maintain the intention to seek knowledge sincerely.” Table 2 illustrates examples of Islamic elements embedded into different AI learning platforms used during the study.

Table 2. Integration of Islamic Values in AI Learning Tools

Source: Document Analysis, 2025

AI Tool	Customization Strategy	Islamic Element Incorporated
Duolingo	Personalized lessons	Vocabulary based on Islamic terms
Google Translate	Phrase bank from Qur'an and Hadith	Exposure to Arabic-English religious texts
Quizlet	Flashcard sets with Islamic moral themes	Reinforcement of akhlaq and adab

This finding illustrates that technological advancement does not need to come at the expense of religious identity. Instead, it can be a means of strengthening the connection between learning and faith.

3.4. Pedagogical Challenges and Institutional Readiness

Despite these promising developments, several challenges were identified that may hinder broader implementation of AI-based language learning in Islamic higher education. These include:

- **Digital infrastructure gaps:** Some students lacked stable internet or access to devices outside campus.

- **Faculty training needs:** Lecturers noted the lack of structured training on AI tools.
- **Cultural resistance:** A few educators expressed initial skepticism about using “machines” in a religiously guided classroom.

These challenges are outlined in Table 3.

Table 3. Key Challenges in AI Integration at UNIMEN

Source: Interview Data, 2025

Challenge	Description	Frequency (N=15 Lecturers)
Internet/Device Accessibility	Limited access in rural areas or among underprivileged groups	11
Lack of Training	Inadequate support for lecturers to learn AI tools	9
Cultural or Religious Concerns	Hesitance regarding appropriateness of AI in faith contexts	6

These findings suggest that successful AI integration must be accompanied by institutional support in infrastructure development and human resource capacity building. Stakeholders must also engage in dialogue to ensure AI use aligns with Islamic pedagogical principles.

3.5. Thematic Integration: Toward a Holistic Model

The integration of digital literacy, Islamic values, and AI tools requires a comprehensive educational model (Mar, 2024; Maspul, 2024). Based on the study’s findings, we propose a four-pillar framework for AI-supported Islamic language education at UNIMEN:

1. **Technological Proficiency:** Ensuring students and staff are confident and capable in using AI tools.
2. **Pedagogical Adaptation:** Aligning instructional methods with AI affordances (e.g., personalization, interactivity).
3. **Spiritual Contextualization:** Embedding Islamic ethics, language, and identity into AI content.
4. **Institutional Support:** Providing infrastructure, training, and policy support.

Figure 2. Proposed Framework for AI-Based Islamic Language Learning

Source: Researcher’s Synthesis (2025)

Note: In your final Word file, insert a conceptual diagram with four interconnected circles labeled as the four pillars above.

This model aligns with the mission of Muhammadiyah to promote progressive education while preserving Islamic values. It reflects a shift from purely content-based instruction toward an integrated approach that develops technological, spiritual, and cognitive competencies.

3.6. Implications for Islamic Higher Education

The implications of this study extend beyond UNIMEN to other Islamic higher education institutions in Indonesia and globally. First, the findings demonstrate that AI tools can significantly enhance student learning without compromising religious values when implemented thoughtfully. Second, the research highlights the importance of balancing innovation with tradition—leveraging technology as a *wasilah* (means), not an end. Lastly, the study calls for institutional frameworks that support long-term digital transformation, including curriculum development, investment in infrastructure, and ethical AI policies (Bando, n.d.).

3.7. Limitations and Future Directions

While this study provides rich insights, it has certain limitations. The sample size was limited to a single institution, and the data reflect a specific cultural and religious context. Future research could explore comparative studies between Muhammadiyah and other Islamic educational systems or longitudinal studies to assess long-term impacts of AI integration (Adima et al., 2024; Baihaqi, 2023; Bulan et al., 2024; Rahayu et al., 2023; Salsabila, 2019).

Additionally, future efforts could investigate the development of bespoke AI tools tailored for Islamic learning contexts—such as AI chatbots that provide both language practice and spiritual guidance, or adaptive learning systems that adjust content based on religious occasions (e.g., Ramadan, Islamic New Year).

Conclusion

The integration of digital literacy and artificial intelligence (AI) in Islamic higher education represents a transformative approach to contemporary pedagogy, particularly in the realm of language learning. This study, conducted at Universitas Muhammadiyah Enrekang (UNIMEN), demonstrates that AI-based tools can significantly enhance students' technological self-efficacy, engagement, and motivation while simultaneously preserving and promoting Islamic values. By employing intelligent tutoring systems, speech recognition software, and adaptive platforms, students not only improved their English language proficiency but also gained confidence in utilizing digital technologies. The incorporation of Islamic themes and ethical guidelines into AI-supported learning environments ensured that the spiritual mission of Islamic education remained central. The resulting synergy between

technology and faith highlights the potential for a pedagogical model that is both forward-thinking and spiritually grounded. However, the successful implementation of such innovations requires more than just access to technology. It calls for a holistic framework that includes institutional readiness, professional development for educators, and culturally sensitive digital content (Syaparuddin, 2020). The study underscores the importance of designing learning systems that align with both 21st-century skills and the moral compass of Islamic teachings (Pangga, 2024). So, strengthening digital literacy through AI within the context of Islamic education is not only feasible but essential for preparing students to navigate the complexities of global knowledge without losing sight of their religious identity. As Islamic higher education institutions continue to adapt to the digital age, this integrated approach offers a sustainable pathway to produce graduates who are intellectually competent, technologically proficient, and morally upright.

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