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Learning Experiences and Student Independence in AI-Based Hijaiyah Letter Pronunciation Practice in Elementary Schools

Davi Ariyanto[1]*, Rizka Jadidah Gulo[2], Helena Putri[3], Alif Ikhwan Aziz[4]

Universitas Muhammadiyah Sumatera Utara, Indonesia*[1, 2, 3, 4]
[1]*email:* daviarianto@gmail.com
[*2]*email:* jadidagulo@gmail.com
[3]*email:* helenaputri@gmail.com
[4]*email:* alif@gmail.com

Abstract: This study aims to analyze learning experiences and student independence in AI-based Hijaiyah letter pronunciation practice in elementary schools. The use of Artificial Intelligence (AI) in learning provides opportunities to create more interactive, adaptive, and personalized learning processes based on students' needs. This research employed a qualitative approach with a descriptive method. The participants were elementary school students engaged in Hijaiyah pronunciation learning using AI-based applications. Data were collected through observations, interviews, and documentation, and analyzed using data reduction, data display, and conclusion drawing techniques. The findings reveal that the use of AI in Hijaiyah pronunciation practice enhances students' learning experiences, making them more engaging and enjoyable. In addition, students demonstrated increased learning independence, as indicated by their ability to practice independently, repeat materials as needed, and receive immediate feedback from the system. This study concludes that AI-based learning is effective in improving both learning experiences and student independence in Hijaiyah letter learning at the elementary school level.

Keywords: Artificial Intelligence; Hijaiyah Letters; Learning Experience; Student Independence; Elementary School.

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Abstrak: Penelitian ini bertujuan untuk menganalisis pengalaman belajar dan tingkat kemandirian siswa sekolah dasar dalam latihan pelafalan huruf hijaiyah berbasis *Artificial Intelligence* (AI). Pemanfaatan teknologi AI dalam pembelajaran memberikan peluang untuk menciptakan proses belajar yang lebih interaktif, adaptif, dan personal sesuai dengan kebutuhan siswa. Penelitian ini menggunakan pendekatan kualitatif dengan metode deskriptif. Subjek penelitian adalah siswa sekolah dasar yang mengikuti pembelajaran pelafalan huruf hijaiyah menggunakan aplikasi berbasis AI. Teknik pengumpulan data dilakukan melalui observasi,

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wawancara, dan dokumentasi. Analisis data dilakukan melalui reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa penggunaan AI dalam latihan pelafalan huruf hijaiyah mampu meningkatkan pengalaman belajar siswa menjadi lebih menarik dan menyenangkan. Selain itu, siswa menunjukkan peningkatan kemandirian belajar, ditandai dengan kemampuan berlatih secara mandiri, mengulang materi sesuai kebutuhan, serta memperoleh umpan balik langsung dari sistem. Penelitian ini menyimpulkan bahwa pembelajaran berbasis AI efektif dalam meningkatkan kualitas pengalaman belajar dan kemandirian siswa dalam pembelajaran huruf hijaiyah di sekolah dasar.

Kata Kunci: Artificial Intelligence; Huruf Hijaiyah; Pengalaman Belajar; Kemandirian Siswa; Sekolah Dasar.

A. Introduction

The rapid advancement of digital technology has significantly transformed the landscape of education across all levels, including elementary education. The integration of emerging technologies such as Artificial Intelligence (AI) into the learning process has created new opportunities to enhance the quality of teaching and learning. AI enables adaptive, personalized, and interactive learning experiences that can meet the diverse needs of students (Luckin et al., 2016).

In recent years, AI has been increasingly utilized in language learning, including pronunciation training. AI-powered applications are capable of providing instant feedback, speech recognition, and personalized guidance, which are essential for improving pronunciation skills. This technological advancement offers promising potential for enhancing the learning of Hijaiyah letters in Islamic education contexts.

Learning Hijaiyah letters is a fundamental aspect of Islamic education, particularly at the elementary school level. Mastery of Hijaiyah pronunciation is crucial for reading the Qur'an correctly. However, many students face difficulties in accurately pronouncing these letters due to the complexity of articulation and limited practice opportunities.

Traditional methods of teaching Hijaiyah pronunciation often rely on teacher-centered approaches, where students passively imitate the teacher's pronunciation.

While this method has been widely used, it may not sufficiently address individual learning needs or provide adequate opportunities for independent practice (Hefner, 2009).

The integration of AI in learning offers an alternative approach that can complement traditional teaching methods. AI-based learning systems can analyze students' pronunciation and provide immediate corrective feedback, allowing learners to improve their skills through repeated practice (Holmes et al., 2019).

One of the key advantages of AI-based learning is its ability to enhance students' learning experiences. Learning experience refers to how students perceive and engage with the learning process. Positive learning experiences are associated with higher levels of motivation, engagement, and academic achievement (Kolb, 1984).

In addition to improving learning experiences, AI-based learning also has the potential to foster student independence. Independent learning is an essential skill in the 21st century, as it enables students to take responsibility for their own learning and adapt to changing environments (Zimmerman, 2002).

AI-based applications support independent learning by allowing students to learn at their own pace, access learning materials anytime, and receive immediate feedback without relying solely on teachers. This flexibility is particularly beneficial for elementary school students who require frequent practice and reinforcement.

Moreover, AI-based learning can create a more engaging and interactive learning environment. Features such as gamification, visual aids, and interactive exercises can make learning more enjoyable and reduce students' anxiety, especially when learning new and complex skills like Hijaiyah pronunciation (Plass et al., 2015).

Despite its potential benefits, the implementation of AI in elementary education also presents several challenges. These include limited access to technology, lack of teacher training, and concerns about the effectiveness of AI-based learning tools in different contexts (Selwyn, 2016).

Furthermore, there is still limited research focusing on the use of AI in Islamic education, particularly in the context of Hijaiyah pronunciation learning. Most existing

studies have focused on general language learning, leaving a gap in understanding how AI can be effectively applied in religious education settings.

This study aims to address this gap by examining the learning experiences and student independence in AI-based Hijaiyah pronunciation practice. By focusing on elementary school students, this research provides insights into how AI can support early-stage learning in Islamic education.

The concept of learning experience is central to this study. It encompasses students' cognitive, emotional, and behavioral engagement in the learning process. A positive learning experience is essential for fostering long-term interest and motivation in learning (Kolb, 1984).

Similarly, student independence is a critical outcome of modern education. It involves the ability to set learning goals, monitor progress, and evaluate outcomes independently. Developing this skill from an early age can have long-term benefits for students' academic and personal development (Zimmerman, 2002).

The integration of AI in Hijaiyah learning provides an opportunity to simultaneously enhance learning experience and independence. Through interactive and adaptive features, AI-based systems can support students in developing both skills effectively.

In addition, this study highlights the importance of innovation in Islamic education. As educational environments continue to evolve, it is essential for educators to adopt new technologies that can improve learning outcomes and meet the needs of modern learners.

The significance of this research lies in its potential to contribute to the development of innovative teaching strategies in Islamic education. The findings are expected to provide practical implications for teachers, curriculum developers, and policymakers.

Based on the background presented, this study aims to analyze how AI-based Hijaiyah pronunciation practice influences students' learning experiences and independence. It also seeks to identify the benefits and challenges associated with the use of AI in elementary education.

In conclusion, the integration of AI into Hijaiyah learning represents a promising approach to enhancing the quality of Islamic education. By providing interactive, personalized, and engaging learning experiences, AI has the potential to transform traditional teaching practices and promote independent learning among students.

B. Research Methodology

This study employed a qualitative research approach with a descriptive design to explore students' learning experiences and independence in AI-based Hijaiyah letter pronunciation practice. A qualitative approach was considered appropriate because it allows for an in-depth understanding of students' perceptions, behaviors, and interactions within a natural learning environment (Creswell & Creswell, 2018).

The research was conducted in an elementary school where Islamic Education is part of the core curriculum. The participants of this study were elementary school students who engaged in Hijaiyah pronunciation learning using an AI-based application. A purposive sampling technique was used to select participants based on specific criteria, such as active participation in the learning program and exposure to AI-based learning tools (Etikan, Musa, & Alkassim, 2016).

Data collection was carried out through multiple techniques, including classroom observations, semi-structured interviews, and documentation. Observations were conducted to examine students' engagement, interaction, and behavior during AI-assisted learning sessions. Semi-structured interviews were used to gather students' perspectives on their learning experiences and independence, while documentation included students' practice records and system-generated feedback (Merriam & Tisdell, 2016).

The instruments used in this study were designed to capture key aspects of learning experience and student independence. The observation checklist focused on indicators such as attention, participation, and interaction with the AI system. The interview guide included questions related to students' motivation, perceived ease of use, and ability to learn independently.

To ensure the trustworthiness of the data, this study applied several validation strategies, including triangulation, member checking, and prolonged engagement. Triangulation was achieved by comparing data from observations, interviews, and documentation. Member checking was conducted by confirming findings with participants, while prolonged engagement helped the researcher gain a deeper understanding of the research context (Lincoln & Guba, 1985).

Data analysis was conducted using thematic analysis. The process began with data transcription, followed by coding to identify patterns and themes related to learning experiences and student independence. These themes were then categorized and interpreted to provide meaningful insights into the effectiveness of AI-based learning (Braun & Clarke, 2006).

Ethical considerations were carefully addressed throughout the study. Informed consent was obtained from students and their guardians prior to data collection. Participants' confidentiality and anonymity were maintained by using pseudonyms and secure data storage. The study adhered to ethical standards in educational research to ensure the protection and well-being of all participants (Creswell & Creswell, 2018).

C. Results and Discussion

The findings of this study indicate that the use of Artificial Intelligence (AI) in Hijaiyah letter pronunciation practice significantly enhances students' learning experiences. Students demonstrated higher levels of engagement and enthusiasm during AI-assisted learning sessions compared to traditional methods. This aligns with previous research suggesting that technology-enhanced learning environments can increase student motivation (Selwyn, 2016).

One of the most notable findings is that AI-based applications provide immediate and personalized feedback to students. This feature allows learners to identify and correct their pronunciation errors in real time. Such feedback is crucial in language learning, as it helps reinforce correct pronunciation patterns (Holmes et al., 2019).

Students reported that the AI system made learning more interactive and enjoyable. Features such as audio-visual aids and gamified exercises contributed to a

more engaging learning environment. This supports the idea that multimedia elements can improve comprehension and retention (Mayer, 2009).

In terms of learning experience, students expressed positive perceptions of AI-based learning. They found the system easy to use and helpful in guiding their learning process. A positive learning experience is essential for fostering sustained engagement and interest (Kolb, 1984).

The study also found that AI-based learning promotes student independence. Students were able to practice Hijaiyah pronunciation without constant teacher supervision. This autonomy allows learners to take control of their own learning process, which is a key component of independent learning (Zimmerman, 2002).

Furthermore, students demonstrated the ability to repeat learning materials as needed. The flexibility provided by AI-based applications enables students to learn at their own pace, which is particularly beneficial for mastering complex pronunciation skills.

Observation data revealed that students became more confident in their pronunciation abilities over time. This increased confidence is likely a result of continuous practice and immediate feedback provided by the AI system.

The findings also indicate that AI-based learning reduces students' anxiety when practicing pronunciation. Unlike traditional classroom settings, where students may feel embarrassed to make mistakes, AI provides a private and supportive learning environment.

Another important finding is the role of AI in supporting differentiated learning. Students with varying levels of ability were able to benefit from the same system, as it adapts to individual learning needs. This aligns with the principles of personalized learning (Tomlinson, 2014).

In addition, AI-based learning fosters active participation. Students were more willing to engage in learning activities, as the interactive nature of the system encouraged exploration and experimentation.

The study also highlights the importance of digital literacy in maximizing the benefits of AI-based learning. Students who were more familiar with digital tools were able to use the system more effectively. This finding is consistent with previous research on digital competence (Koehler & Mishra, 2009).

However, some challenges were identified in the implementation of AI-based learning. Limited access to devices and internet connectivity posed barriers for some students. This issue reflects broader challenges in integrating technology in education (Selwyn, 2016).

Another challenge is the need for teacher support. Although AI enables independent learning, teachers still play a crucial role in guiding students and ensuring that learning objectives are achieved.

The findings also emphasize the importance of integrating AI with traditional teaching methods. A blended approach that combines technology and teacher instruction can provide a more comprehensive learning experience.

In the context of Islamic education, AI-based learning offers a new way to teach Hijaiyah pronunciation effectively. It allows students to engage with religious learning materials in a modern and relevant manner.

The use of AI also supports continuous assessment. Teachers can monitor students' progress through system-generated data, enabling more informed instructional decisions.

Moreover, AI-based learning encourages self-regulated learning. Students develop skills such as goal setting, self-monitoring, and self-evaluation, which are essential for lifelong learning (Zimmerman, 2002).

The findings suggest that AI has the potential to transform traditional approaches to Hijaiyah learning. By providing interactive and adaptive learning experiences, AI can enhance both the quality and accessibility of education.

In terms of pedagogical implications, educators should consider integrating AI-based tools into their teaching practices to improve student outcomes. Proper training and support are essential to ensure effective implementation.

Overall, the results demonstrate that AI-based Hijaiyah pronunciation practice is effective in enhancing learning experiences and student independence. It provides a flexible, engaging, and supportive learning environment that meets the needs of modern learners.

Finally, this study contributes to the growing body of literature on AI in education, particularly in the context of Islamic education. It highlights both the opportunities and challenges associated with AI integration and provides valuable insights for future research and practice.

D. Conclusion

This study demonstrates that the integration of Artificial Intelligence (AI) in Hijaiyah letter pronunciation practice significantly enhances elementary students' learning experiences. The use of AI-based applications creates a more interactive, engaging, and enjoyable learning environment, enabling students to better understand and practice pronunciation skills. The availability of immediate feedback and multimedia features plays a crucial role in supporting students' comprehension and improving their learning outcomes.

Furthermore, the findings reveal that AI-based learning contributes to the development of student independence. Students are able to practice autonomously, regulate their own learning pace, and repeat materials according to their individual needs. This fosters essential self-regulated learning skills, including self-monitoring and self-evaluation, which are important for long-term academic success. The flexibility provided by AI technology allows learners to take greater responsibility for their learning process.

Finally, despite challenges such as limited access to technological resources and varying levels of digital literacy, the overall implementation of AI in Hijaiyah learning shows promising results. This study suggests that combining AI-based learning with

teacher guidance can create a more effective and balanced instructional approach. Future research is recommended to explore broader applications of AI in Islamic education and to examine its long-term impact on students' learning achievements and independence.

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