

UTILIZING ARTIFICIAL INTELLIGENCE IN ISLAMIC RELIGIOUS EDUCATION THROUGH GAME-BASED LEARNING TO STIMULATE STUDENTS' SCIENTIFIC THINKING SKILLS

Danu Sakban, Syahriani Yulianci, Rizalul Fiqry

Sekolah Tinggi Keguruan dan Ilmu Pendidikan Taman Siswa Bima

Jl. Pendidikan Taman Siswa No.01 Palibelo Bima, Bima, Nusa Tenggara Barat

Email: ppsmadawau@gmail.com, yulianci.syah@gmail.com, doudonggo@gmail.com

Abstract: The integration of Artificial Intelligence (AI) into Islamic Religious Education opens opportunities for interactive, adaptive, and student-centered learning. This study analyzes the utilization of AI through Game-Based Learning to stimulate students' scientific thinking skills at MI Palama Donggo. A qualitative approach was employed using observation, interviews, and documentation involving the principal, teachers, and students. Data credibility was ensured through source and technique triangulation, while data analysis included reduction, categorization, presentation, and verification. The findings show that AI-supported Game-Based Learning provides engaging learning experiences through adaptive questions, immediate feedback, and interactive activities. Students demonstrated greater enthusiasm, active participation, willingness to try, and improved reflection. Implementation was supported by school commitment, teacher readiness, technological facilities, and student motivation, but was constrained by limited devices, internet connectivity, and instructional time. Students demonstrated developing scientific thinking skills through observing, questioning, reasoning, evaluating, correcting mistakes, and drawing conclusions. Thus, AI through Game-Based Learning has the potential to strengthen Islamic Religious Education while fostering students' scientific thinking skills.

Keywords: Artificial Intelligence, Game-Based Learning, Scientific Thinking

Abstrak: Integrasi Artificial Intelligence (AI) dalam Islamic Religious Education membuka peluang pembelajaran interaktif, adaptif, dan berpusat pada siswa. Penelitian ini menganalisis pemanfaatan AI melalui *Game-Based Learning* untuk menstimulasi keterampilan berpikir ilmiah siswa di MI Palama Donggo. Pendekatan kualitatif digunakan dengan observasi, wawancara, dan dokumentasi melibatkan kepala madrasah, guru, serta siswa. Keabsahan data dijamin melalui triangulasi sumber dan teknik, sedangkan analisis mencakup reduksi, kategorisasi, penyajian, dan verifikasi. Hasil menunjukkan bahwa *Game-Based Learning* berbantuan AI menghadirkan pengalaman belajar menarik melalui pertanyaan adaptif, umpan balik langsung, dan aktivitas interaktif. Siswa menunjukkan antusiasme, partisipasi aktif, keberanian mencoba, serta refleksi lebih baik. Implementasi didukung komitmen sekolah, kesiapan guru, fasilitas teknologi, dan motivasi siswa, namun terkendala perangkat terbatas, jaringan internet, dan waktu. Siswa mengalami perkembangan keterampilan berpikir ilmiah melalui mengamati, menanya, menalar, mengevaluasi, memperbaiki kesalahan, dan menyimpulkan. Dengan demikian, AI melalui *Game-Based Learning* berpotensi memperkuat Islamic Religious Education sekaligus menumbuhkan keterampilan berpikir ilmiah.

Kata Kunci: Kecerdasan Buatan, Pembelajaran Berbasis Permainan, Berpikir Ilmiah

INTRODUCTION

Education, as mandated by Law No. 20 of 2003 concerning the National Education System, is a conscious and planned effort to create a learning environment and process that enables students to actively develop their potential, including spiritual strength, self-control, personality, intelligence, noble character, and skills needed in personal, social, national, and state life. This mandate places education not merely as a mechanism for transferring knowledge, but as a strategic process for developing competent, adaptive, and character-oriented human resources. The quality of educational resources is closely related to the capacity of an educational system to respond to social and technological change. Therefore, the development of knowledge, skills, attitudes, and values must continuously be aligned with the demands of contemporary life (Widiansyah, 2018). In the context of 21st-century education, students are expected not only to master subject matter but also to develop higher-order thinking, problem-solving, communication, collaboration, information literacy, and technological competencies (Muhali, 2019).

These demands have increasingly challenged schools to redesign curricula and learning processes so that students can actively construct knowledge rather than merely receive information. Curriculum development consequently needs to respond to rapid changes in science, technology, and society while maintaining essential educational objectives. Recent curriculum policies in Indonesia similarly

emphasize learning that is adaptive, differentiated, student-centered, and responsive to students' diverse learning needs (Nirwana & Khoiri, 2023; Wahyudi et al., 2023). Such transformation is particularly important at the elementary level because early educational experiences provide the foundation for students' intellectual habits, including curiosity, reasoning, observation, and systematic problem-solving.

One of the technological developments with substantial implications for this transformation is Artificial Intelligence. Artificial Intelligence has increasingly entered educational practices through intelligent learning systems, automated feedback, adaptive learning resources, and interactive educational applications. Its potential lies not simply in automating instructional tasks but in supporting learning experiences that are more personalized, responsive, and engaging. Studies have demonstrated that Artificial Intelligence can be integrated into instructional innovation to improve learning effectiveness and support the development of contemporary competencies (Soegiarto et al., 2023; Prastika et al., 2024; Susanyah et al., 2025). More specifically, the integration of Artificial Intelligence with instructional models can create learning environments that respond to students' performance and provide learning stimuli according to their needs. This development is particularly relevant to elementary education, where meaningful interaction and immediate

feedback are important components of effective learning.

Within Islamic Religious Education, technological transformation requires particular attention because the subject has a dual orientation: developing students' understanding of Islamic teachings while simultaneously cultivating attitudes, values, and intellectual dispositions grounded in Islamic principles. Islamic Religious Education should therefore not be restricted to memorizing religious concepts, verses, or normative information. It should encourage students to observe phenomena, ask questions, identify relationships, classify information, reason logically, and formulate conclusions. Such processes are compatible with the development of scientific thinking skills, which are essential for enabling students to approach problems systematically and critically. The integration of contemporary learning approaches into Islamic education is consequently necessary to ensure that Islamic Religious Education remains relevant to the intellectual and technological realities experienced by today's learners.

However, classroom practices at the elementary level may still rely heavily on teacher explanations, textbooks, and memorization-oriented activities. Such approaches can limit opportunities for students to participate actively in constructing knowledge and applying concepts to concrete situations. In this context, the challenge is not merely how to introduce technology into Islamic Religious Education but how to employ technology

through an appropriate pedagogical strategy that stimulates meaningful student engagement. The use of digital technology without pedagogical integration may result only in replacing conventional media with digital media without substantially transforming the learning process. Therefore, technological innovation needs to be connected with learning strategies that encourage participation, exploration, feedback, and reasoning.

Game-Based Learning offers an important pedagogical possibility in this regard. Game-Based Learning utilizes game elements and gameplay as part of the learning process to create interactive and motivating instructional experiences. Its student-centered characteristics can encourage active participation while enabling learners to engage with concepts through challenges, rules, feedback, and problem-solving situations. Wibawa et al. (2021) describe Game-Based Learning as an innovative approach capable of facilitating students' adaptation to changing learning environments, while Maulidina et al. (2018) demonstrate the potential of game-based learning integrated with a scientific approach for elementary school students. These findings indicate that games can function not merely as entertainment but as instructional environments in which students encounter problems, make decisions, receive feedback, and develop cognitive responses.

The integration of Artificial Intelligence into Game-Based Learning further expands this pedagogical potential. Artificial Intelligence-supported

educational games can be designed to provide adaptive challenges, personalized feedback, and responsive learning experiences based on students' performance. Recent research has begun to demonstrate the educational potential of combining Artificial Intelligence and game-based models, including for collaborative skills and subject-specific learning (Dhorifah & Sari, 2025; Mashuri & Yudasari, 2025). Nevertheless, existing studies have predominantly examined Artificial Intelligence and Game-Based Learning in general education, mathematics, social studies, or collaborative learning outcomes. Research specifically examining the integration of Artificial Intelligence and Game-Based Learning within Islamic Religious Education to stimulate students' scientific thinking skills at the elementary-school level remains limited. This gap is particularly significant because Islamic Religious Education possesses substantial potential for connecting religious knowledge with students' curiosity about natural, social, and everyday phenomena.

This condition is relevant to MI Palama Donggo, where the utilization of Artificial Intelligence-supported learning and Game-Based Learning in Islamic Religious Education remains relatively limited. Conventional learning practices provide insufficient space for students to experience interactive, exploratory, and problem-oriented learning. At the same time, the characteristics of elementary students, who generally respond positively to visual, interactive, and play-oriented activities, create a strong pedagogical

rationale for integrating Game-Based Learning with Artificial Intelligence. Accordingly, this study seeks to examine the utilization of Artificial Intelligence in Islamic Religious Education through Game-Based Learning to stimulate students' scientific thinking skills. The novelty of this research lies in positioning Artificial Intelligence not merely as a technological tool but as an integral component of a game-based pedagogical environment within Islamic Religious Education, with scientific thinking as the central learning outcome. The study is therefore expected to contribute theoretically to the intersection of Islamic education, Artificial Intelligence-supported pedagogy, and scientific thinking development, while providing practical insights for teachers seeking to design Islamic Religious Education learning that is interactive, adaptive, meaningful, and responsive to the demands of 21st-century education.

METHOD

This study employed a qualitative approach to examine the utilization of Artificial Intelligence in Islamic Religious Education through Game-Based Learning to stimulate students' scientific thinking skills. A qualitative approach was selected because the study focused on understanding learning processes, classroom interactions, students' responses, teachers' experiences, and contextual conditions surrounding the implementation of Artificial Intelligence and Game-Based Learning in a natural educational setting. Qualitative research

enables researchers to explore social realities through direct interaction with research participants and to understand the meanings underlying educational experiences and practices (Raco, 2010; Abdussamad, 2021). The research was conducted at MI Palama Donggo, involving Islamic Religious Education teachers and students who directly participated in the learning activities.

Data were collected through observation, in-depth interviews, and documentation. Observation was conducted during Islamic Religious Education learning activities to identify how Artificial Intelligence-supported Game-Based Learning was implemented and how students responded to the learning process. The observation focused particularly on student participation, interaction, engagement, problem-solving activities, and indicators of scientific thinking skills, including observing, questioning, classifying, reasoning, and drawing conclusions. In-depth interviews were conducted with Islamic Religious Education teachers and selected students to obtain detailed information concerning their experiences, perceptions, responses, benefits, and challenges related to the implementation of Artificial Intelligence and Game-Based Learning. Documentation was used to complement observational and interview data through relevant learning materials, lesson plans, photographs, students' learning activities, and other instructional documents.

The credibility of the data was maintained through triangulation of

sources and data collection techniques. Source triangulation was conducted by comparing information obtained from teachers, students, and supporting documents. Meanwhile, technique triangulation involved comparing findings from observations, interviews, and documentation. The triangulation process was used to identify similarities and differences among sources and to ensure that the findings reflected the actual learning context rather than relying on a single source of information.

Data analysis was conducted systematically through several interconnected stages. First, the researcher organized and repeatedly reviewed the observation notes, interview transcripts, and documentation. Second, relevant data were selected and reduced according to the research focus, particularly the utilization of Artificial Intelligence, implementation of Game-Based Learning, student engagement, and development of scientific thinking skills. Third, the reduced data were categorized into emerging themes and presented descriptively to identify patterns and relationships among the findings. Finally, conclusions were formulated and continuously verified by comparing the emerging interpretations with the collected empirical evidence. This analytical process enabled the researcher to obtain a comprehensive understanding of the implementation of Artificial Intelligence-supported Game-Based Learning and its contribution to stimulating students' scientific thinking

skills in Islamic Religious Education at MI Palama Donggo.

RESULTS AND DISCUSSION

Implementation of Artificial Intelligence through Game-Based Learning in Islamic Religious Education

The findings indicate that the utilization of Artificial Intelligence through Game-Based Learning in Islamic Religious Education at MI Palama Donggo has begun to be implemented as part of the school's efforts to develop learning innovations that are adaptive to technological developments. This implementation is not merely understood as the use of digital devices in learning activities but is directed toward creating learning experiences that are more interactive, engaging, and conducive to active student participation. The principal explained that the school had begun encouraging teachers to use digital learning media, including educational games utilizing Artificial Intelligence, to make Islamic Religious Education more engaging and relevant to contemporary developments. The principal stated, "Our school has begun encouraging teachers to use digital learning media, including educational games that utilize Artificial Intelligence, so that Islamic Religious Education becomes more engaging and relevant to the times. We want children to learn not only from books but also from technologies that are already familiar in their everyday lives" (Interview with the Principal of MI Palama Donggo, 2026). This statement demonstrates institutional support for learning transformation and an

awareness that students' characteristics need to be accommodated through learning approaches relevant to their digital environment.

At the classroom level, the Islamic Religious Education teacher integrated Artificial Intelligence-based educational games with material presentation, discussion, and reflective activities. The teacher explained that the applications used had the ability to adjust the difficulty level of questions according to students' abilities and provide automatic feedback. The teacher stated, "I use educational games that can adjust the questions according to students' abilities. The children become more enthusiastic and active when learning Islamic Religious Education. They do not simply listen to my explanations but also directly try and think for themselves through the games" (Interview with the Islamic Religious Education Teacher at MI Palama Donggo, 2026). This finding indicates that Artificial Intelligence functions as a supporting component of adaptive learning, while Game-Based Learning provides a learning environment that enables students to interact directly with the learning materials. These characteristics are consistent with the development of 21st-century learning, which requires more innovative, active, and student-centered learning (Muhali, 2019).

These findings also reinforce the study by Maulidina et al. (2018), which demonstrated that Game-Based Learning developed through a scientific approach can support learning among elementary school students. Game-Based Learning enables

learning activities to be organized through challenges and feedback so that students do not merely receive information but also engage in decision-making and problem-solving processes. Wibawa et al. (2021) similarly positioned Game-Based Learning as an innovative learning approach capable of facilitating adaptation to changing educational environments. In the context of Artificial Intelligence, learning becomes increasingly promising because the system can respond to students' activities and abilities. This finding is consistent with Dhorifah and Sari (2025), who demonstrated the potential of integrating Game-Based Learning and Artificial Intelligence to enhance student engagement and skills.

From the students' perspective, the use of educational games provided a different learning experience compared with conventional instruction. One student stated, "Learning with games is fun, Ma'am. I can immediately know whether my answer is right or wrong, so I want to try again. When I make a mistake, I am not embarrassed because I can immediately correct it" (Interview with a Student at MI Palama Donggo, 2026). Such immediate feedback creates opportunities for students to experiment, recognize mistakes, and correct their answers without excessive pressure. This condition is important for creating a learning environment that encourages students to have the confidence to try and learn from mistakes. The integration of technology into learning is also consistent with the development of 21st-century skills, which emphasize not

only mastery of subject matter but also the ability to think, adapt, and use technology productively (Prastika et al., 2024).

Thus, the implementation of Artificial Intelligence through Game-Based Learning at MI Palama Donggo demonstrates a transition from predominantly transmissive learning toward a more interactive and responsive learning process. This finding is consistent with Soegiarto et al. (2023), who positioned Artificial Intelligence as part of educational innovation in responding to the Industrial Revolution 4.0 and Society 5.0. Sujana et al. (2023) also demonstrated that Artificial Intelligence can be utilized in developing innovative learning resources by considering teacher readiness, student characteristics, and available facilities. Therefore, the utilization of Artificial Intelligence through Game-Based Learning in Islamic Religious Education is not merely a form of modernization of instructional media but constitutes a pedagogical strategy with the potential to create learning that is more adaptive, participatory, and relevant to students' needs in the digital era.

Supporting and Inhibiting Factors in the Utilization of Artificial Intelligence through Game-Based Learning

The findings indicate that the utilization of Artificial Intelligence through Game-Based Learning in Islamic Religious Education at MI Palama Donggo is influenced by several interrelated factors originating from both the school environment and the characteristics of

teachers and students. The main supporting factors include institutional support, the availability of technological facilities, teachers' willingness to innovate, and students' enthusiasm during the learning process. The principal emphasized that facilities and teacher readiness were important foundations for implementing technology-based learning. The principal stated, "The supporting factors are certainly the facilities and teachers' willingness, but the challenges are still the limited number of devices and the internet connection, which is sometimes unstable. We continue trying to improve the facilities, but not everything can be fulfilled yet" (Interview with the Principal of MI Palama Donggo, 2026). This statement demonstrates that the successful integration of Artificial Intelligence depends not only on the sophistication of applications but also on the readiness of the educational ecosystem supporting their use.

Student enthusiasm is another important supporting factor. The Islamic Religious Education teacher stated that students responded positively when learning was organized through games. The teacher explained, "The children are very enthusiastic, and that is the main supporting factor. However, sometimes there is not enough time, and the internet connection is often slow, so the learning process does not always run as smoothly as planned" (Interview with the Islamic Religious Education Teacher at MI Palama Donggo, 2026). This enthusiasm indicates that Game-Based Learning has an appeal that is compatible with the characteristics of

elementary school students. Wibawa et al. (2021) explained that Game-Based Learning can serve as an innovative learning approach because it provides more interactive learning experiences and enables students to adapt to different learning patterns. Maulidina et al. (2018) also demonstrated that educational games can be developed using a scientific approach so that game activities remain directed toward achieving learning objectives.

In addition to student enthusiasm, teacher readiness is a pedagogical factor that determines the quality of Artificial Intelligence implementation. Teachers need not only to be able to operate applications but also to understand how the technology can be integrated with learning objectives, subject characteristics, and students' needs. Sujana et al. (2023) emphasized the importance of considering teacher readiness, application potential, student characteristics, and the availability of facilities when Artificial Intelligence is incorporated into learning development. In the context of MI Palama Donggo, the teacher's ability to combine games with material explanations and discussions indicates that technology is beginning to be positioned as a pedagogical instrument rather than a substitute for the teacher's role. This is important because optimal utilization of Artificial Intelligence still requires teacher supervision, guidance, and pedagogical interpretation.

On the other hand, limited access to devices constitutes one of the main obstacles. A student explained, "Sometimes

it is difficult because we have to take turns using the tablets, and when the internet is slow, it takes longer to play. Sometimes we do not have enough time to finish all the questions" (Interview with a Student at MI Palama Donggo, 2026). This finding demonstrates a gap between the potential of technology and the infrastructure available in the school. Limited devices can reduce the intensity of students' interaction with the games, while unstable internet connections can disrupt feedback and the continuity of learning activities. This condition demonstrates that digital transformation in education must be accompanied by strengthening educational resources because the availability of educational resources is one of the determining factors in the success of an educational system (Widiansyah, 2018).

Limited instructional time also constitutes a challenge. The integration of Game-Based Learning requires sufficient time to explain the game rules, ensure that students understand how the application works, conduct the game, discuss answers, and engage in reflection. When instructional time is limited, game activities may become merely question-answering exercises without deeper reflection. Therefore, learning design needs to be adjusted to the objectives and available instructional time. Innovative learning approaches should maintain a strong relationship between technological activities and the competencies to be achieved (Muhali, 2019). In addition, digital learning implementation needs to consider the potential negative effects of technology

when its use is not pedagogically directed (Soegiarto et al., 2023).

Thus, the supporting and inhibiting factors in the utilization of Artificial Intelligence through Game-Based Learning demonstrate that learning innovation is a multidimensional process. Institutional support, teacher competence, student enthusiasm, devices, internet connectivity, and time management must be viewed as an integrated system. This finding is consistent with Wahyudi et al. (2023), who emphasized the importance of adapting learning to students' diverse needs, as well as Hadi et al. (2023), who demonstrated that educational institutions require adaptive strategies to respond to global changes and challenges. Therefore, the sustainability of Artificial Intelligence utilization at MI Palama Donggo requires strengthening infrastructure, improving teachers' digital competence, managing instructional time effectively, and planning technology use in an integrated manner within the objectives of Islamic Religious Education.

Impact of Artificial Intelligence through Game-Based Learning on Students' Scientific Thinking Skills

The findings indicate that the utilization of Artificial Intelligence through Game-Based Learning contributes to the emergence of learning behaviors associated with the development of students' scientific thinking skills in Islamic Religious Education. In this qualitative study, such an impact is not interpreted as a statistically measured improvement but as observable

changes in students' behavior when participating in learning activities, completing game-based challenges, receiving feedback, correcting mistakes, and providing reasons for their selected answers. The principal observed that students had become more willing to ask questions and try different solutions while demonstrating more structured patterns of thinking. The principal stated, "I see that the children are now more willing to ask questions and try. Their way of thinking has also become more organized; they do not simply answer randomly as they did before" (Interview with the Principal of MI Palama Donggo, 2026). This finding indicates that changes in learning are visible not only in motivational aspects but also in students' cognitive processes.

The Islamic Religious Education teacher provided a more specific explanation of these changes. The teacher stated, "With these games, students become accustomed to observing, making predictions, and drawing their own conclusions before answering. They do not immediately choose an answer randomly but try to understand the question first" (Interview with the Islamic Religious Education Teacher at MI Palama Donggo, 2026). This statement demonstrates the emergence of several indicators of scientific thinking skills, particularly the abilities to observe, identify information, formulate predictions, reason, and draw conclusions. These processes are important because scientific thinking at the elementary level does not necessarily have to be understood as conducting complex scientific

investigations but rather as developing the habit of using information systematically before making decisions. In the context of Islamic Religious Education, these skills can be developed through questions and learning situations that encourage students to connect religious concepts with phenomena in everyday life.

Game-Based Learning provides an environment in which these processes can occur through challenging and repetitive activities. When students receive an incorrect answer, the system provides feedback, giving them an opportunity to reconsider their responses. A student stated, "Now I understand the lesson better, and when there is a question, I try to think first before answering. If I am wrong, I look at the explanation first and then try again" (Interview with a Student at MI Palama Donggo, 2026). This statement illustrates a simple reflective process: students read a problem, determine an answer, receive information about an error, examine the explanation, and then attempt the task again. Such a cycle is relevant to the development of critical and scientific thinking because students do not stop at determining whether an answer is correct or incorrect but use feedback to improve their understanding.

These findings are related to the study by Maulidina et al. (2018), which demonstrated that Game-Based Learning based on a scientific approach can be developed for elementary school students. Such an approach provides opportunities for observing, questioning, experimenting, and drawing conclusions, all of which are

closely related to scientific thinking skills. Wibawa et al. (2021) also demonstrated that Game-Based Learning can create more interactive learning and provide learning experiences through challenging activities. When Artificial Intelligence is incorporated into the game environment, the process becomes more adaptive because the system can provide questions and feedback according to students' responses. Dhorifah and Sari (2025) demonstrated the potential of integrating Artificial Intelligence with Game-Based Learning to develop students' skills, while Mashuri and Yudasari (2025) showed how Artificial Intelligence can be incorporated into game-based learning models to optimize the learning process.

From the perspective of educational technology, Artificial Intelligence provides opportunities to develop learning that is more responsive to differences in students' abilities. Prastika et al. (2024) emphasized that the utilization of Artificial Intelligence has potential for supporting the development of 21st-century skills, while Susanyah et al. (2025) demonstrated that Artificial Intelligence can be utilized to improve learning effectiveness. However, the findings at MI Palama Donggo indicate that the primary value of the technology does not lie in Artificial Intelligence itself but in how the technology is positioned within a pedagogical design that encourages students to think. This is consistent with Fatmawati (2025), who emphasized the importance of digital learning transformation in responding to the characteristics of contemporary learners.

Thus, the utilization of Artificial Intelligence through Game-Based Learning in Islamic Religious Education at MI Palama Donggo demonstrates a pedagogical contribution to stimulating students' scientific thinking skills. Students are not merely directed toward obtaining correct answers but are also accustomed to observing problems, considering possible answers, receiving feedback, correcting mistakes, and drawing conclusions. This pattern reinforces the orientation of 21st-century learning, which places thinking abilities as an essential component of educational achievement (Muhali, 2019). In the context of Islamic education, such integration can also broaden the meaning of Islamic Religious Education from the mastery of religious knowledge toward the development of learners who are capable of thinking logically, critically, reflectively, and responsibly. Therefore, Artificial Intelligence through Game-Based Learning can be regarded as a potential approach for connecting technological innovation with the pedagogical objectives of Islamic Religious Education, provided that its implementation remains under teacher supervision and is clearly directed toward the achievement of learning competencies.

CONCLUSION

The study concludes that the utilization of Artificial Intelligence through Game-Based Learning in Islamic Religious Education at MI Palama Donggo represents a relevant pedagogical innovation for responding to the demands of 21st-century education. The implementation of Artificial Intelligence-

supported educational games has created a more interactive, adaptive, and student-centered learning environment. Students demonstrated greater enthusiasm, active participation, willingness to try, and engagement with learning materials through immediate feedback and adaptive challenges. The implementation was supported by institutional commitment, teacher readiness, technological facilities, and students' positive responses. However, limited devices, unstable internet connectivity, and restricted instructional time remain significant challenges that may affect the continuity and effectiveness of implementation. The findings also indicate that Artificial Intelligence through Game-Based Learning contributes to stimulating students' scientific thinking skills. Students demonstrated observable tendencies to examine questions, make predictions, consider alternatives, evaluate feedback, correct mistakes, and formulate conclusions before responding. These processes suggest that technology-supported game-based learning can move Islamic Religious Education beyond memorization-oriented practices toward learning that develops logical, critical, reflective, and systematic thinking. Nevertheless, Artificial Intelligence should not replace the pedagogical role of teachers. Its effectiveness depends on appropriate instructional design, teacher guidance, adequate infrastructure, and alignment with learning objectives. Thus, Artificial Intelligence through Game-Based Learning has significant potential to strengthen innovative Islamic Religious Education while simultaneously stimulating students' scientific thinking skills.

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