



The Use Of Artificial Intelligence In Islamic Education Through Inquiry-Based Learning To Strengthen Students' Critical Thinking Skills

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ABSTRACT

Digital transformation urges Islamic Religious Education (PAI) to shift from conventional rote memorization toward student-centered approaches that foster critical and systematic thinking. This study analyzes the concept of integrating Artificial Intelligence (AI) through the Inquiry-Based Learning (IBL) model in PAI. Using a literature review method, the study finds that AI serves as an adaptive tool that accelerates efficiency across all five stages of the inquiry cycle: stimulating contextual problem identification, refining higher-order questions through dialogue, accelerating naqli and aqli data collection, mapping out comparative data analysis, and enhancing digital presentation findings. However, this integration faces critical challenges, such as low digital literacy among educators, unequal technological infrastructure, risks of AI data hallucinations regarding sacred texts, and threats to student independent thinking. To mitigate these risks, this paper reconstructs the teacher's role as a Murabbi (spiritual mentor) and digital ethics curator who guides students in practicing tabayyun (rigorous verification). In conclusion, the judicious integration of AI and IBL offers an effective learning ecosystem if deployed wisely and proportionally. It is recommended that educational institutions enhance teachers' digital competencies and reinforce spiritual values to ensure technological excellence aligns with moral integrity.

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INTRODUCTION

Digital transformation has fundamentally reshaped the landscape of modern pedagogy, shifting the dominant paradigm from teacher-centered instruction toward student-centered, technology-assisted learning. Within this transformation, Artificial Intelligence (AI) has emerged as one of the most discussed innovations in education, including in the domain of Islamic Religious Education (PAI). Recent literature reviews indicate a positive trend in the adoption of AI for PAI learning: AI has been shown to help students locate references, understand Islamic concepts, obtain additional explanations, and support problem-based learning (Muhammad Aryo Ramadhan, Agus Gunawan, Saddam Lorenza, Zulfa Ainy & Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025). AI is also reported to support the development of more interactive learning content and enable more in-depth data analysis for curriculum improvement (Nur et al., 2024), while simultaneously increasing student motivation through personalized access to broader learning resources (Dina1, Amirul Akbar Marfit2, 2025). These findings collectively suggest that AI integration carries substantial potential to create a more effective, adaptive, and contextually responsive PAI learning environment in the digital era (Hidayat et al., 2024).

Parallel to this development, Inquiry-Based Learning (IBL) has long been recognized as one of the most effective pedagogical models for cultivating critical, analytical, and reflective thinking in Islamic education. IBL emphasizes independent exploration, the formulation of meaningful questions, and the construction of knowledge through a structured scientific inquiry process, rather than rote memorization of religious material (Mahbubah, 2024). Several studies confirm that IBL is capable of fostering a more active, participatory, and collaborative learning atmosphere, encouraging students to connect theoretical religious concepts with real-life situations (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025) (Dina1, Amirul Akbar Marfit2, 2025). From an Islamic epistemological standpoint, this inquiry-driven process is in fact consistent with longstanding Islamic intellectual traditions such as tafakkur, tadabbur, and ijihad, positioning IBL not merely as an imported Western pedagogical concept, but as a model that resonates with the internal logic of Islamic scholarship itself.

When AI is integrated into the IBL model, a new pedagogical opportunity emerges: AI can function as an adaptive dialogue partner and an efficient research assistant at nearly every stage of the inquiry cycle, from contextual stimulation and question formulation to data collection, critical-theological synthesis, and the presentation of findings (Juliani & Hidayat, 2026), (Azizah & Syarif, 2025), (Muzawir Munawarsyah, 2026). This convergence is theoretically significant because it allows AI's efficiency in information processing to operate within the disciplined, reflective structure that IBL provides, rather than allowing students to depend on AI passively for instant answers.

However, existing studies on this subject tend to examine AI and IBL as separate issues rather than as an integrated pedagogical framework. On one hand, several studies highlight the benefits of AI for PAI learning in general terms motivation, access to information, interactive content without specifying how AI

should be positioned within a structured inquiry process (Muhammad Aryo Ramadhan, Agus Gunawan, Saddam Lorenza, Zulfa Ainy & Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025)(Nur et al., 2024). On the other hand, studies on IBL in PAI tend to focus on its pedagogical effectiveness in strengthening critical thinking without substantially addressing how AI technology can be embedded within each of its inquiry stages (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Santoso, 2023)(Utomo, 2020). Furthermore, several studies have identified serious implementation challenges that remain insufficiently addressed in an integrated manner, including limited digital literacy among teachers (Putri et al., 2026), uneven technological infrastructure (Alfayumi, 2025), (Fauzi & Zahro, 2025), the risk of excessive student dependence on AI (Alfayumi, 2025), and ethical concerns regarding data security and the potential dehumanization of religious education (Asroruddin & Jumhuri, 2025). This indicates a clear research gap: a lack of a systematic, stage-by-stage framework that maps how AI can be ethically and pedagogically embedded within the IBL process in PAI learning, while simultaneously anticipating its risks.

To address this gap, the present study offers an analytical mapping of AI's role across each stage of the IBL cycle problem identification, question formulation, data collection, data analysis, and presentation of findings within the specific context of PAI learning, while also identifying the mitigation strategies required at each stage, particularly regarding the risk of AI "data hallucination" and the erosion of academic integrity (Ali et al., 2023), (Juliani & Hidayat, 2026). In doing so, this study seeks to contribute a practical and conceptual foundation for reconstructing the role of the PAI teacher from a mere instructor into a Murabbi: a digital ethics curator, an authentic evaluator of the inquiry process, and a spiritual mentor who instills the prophetic principle of tabayyun (rigorous verification) and akhlak digital (digital ethics) (Juliani & Hidayat, 2026), (Juliani & Hidayat, 2026), (Juliani & Hidayat, 2026).

The novelty of this study lies in its attempt to integrate AI not as a generic instructional aid, but as a stage-specific component within the IBL framework, grounded simultaneously in pedagogical theory and Islamic epistemological values. Unlike previous studies that discuss AI and IBL separately or only at a general conceptual level, this study constructs a more operational narrative of how AI-IBL integration unfolds in practice, complete with its pedagogical impacts, ethical risks, and the corresponding role transformation required of PAI teachers.

Based on this background, this study aims to: (1) describe the conceptual integration of AI within the Inquiry-Based Learning model in PAI learning across each stage of the inquiry process; (2) identify the pedagogical benefits and ethical-technical challenges arising from this integration; and (3) formulate the reconstructed role of the PAI teacher as a Murabbi who is able to optimize the use of AI proportionally, wisely, and in accordance with Islamic values, in order to support the formation of students who are both intellectually critical and spiritually grounded.

LITERATURE REVIEW

1.1 Artificial Intelligence in Islamic Education

Artificial Intelligence (AI) is generally defined as the ability of machines or computer systems to perform tasks that typically require human intelligence, such as natural language understanding, pattern recognition, decision making, and adaptive learning (Asroruddin & Jumhuri, 2025).

Various studies indicate that the use of Artificial Intelligence (AI) in education, including Islamic Religious Education (PAI), has seen rapid development in recent years. Around 2020, research primarily focused on the potential of AI to enhance the effectiveness of technology-based learning processes. Subsequently, during the 2022–2023 period, the focus of research shifted toward transforming the Islamic education curriculum to make it more adaptive to developments in digital technology and the demands of the Fourth Industrial Revolution. Entering 2024, studies on AI have continued to evolve, with an emphasis on its application in learning assessment and the development of digital learning materials. Meanwhile, in 2025, research on AI in Islamic education became more comprehensive, addressing the opportunities, challenges, and ethical implications of its use in Islamic Religious Education (Fauzi & Zahro, 2025).

Nevertheless, most previous studies have focused on technological and pedagogical aspects, such as the effectiveness of AI use, the development of learning media, and curriculum transformation. Studies that simultaneously integrate the use of AI with an analysis of opportunities, challenges, and Islamic ethical values remain relatively limited. Therefore, research is needed that can examine the use of AI in Islamic education in a more comprehensive manner.

Although Artificial Intelligence (AI) offers various benefits in learning, its implementation in Islamic education still faces a number of challenges. One of the main obstacles is the low level of digital literacy and teachers' competence in utilizing AI as a learning tool, resulting in its suboptimal use. In addition, limitations in technological infrastructure such as digital devices and internet access as well as the digital divide among students further hinder the equitable implementation of AI.

Another challenge relates to the accuracy of information generated by AI, as this information does not always align with authoritative Islamic scholarly sources, thus requiring verification by educators. Excessive use of AI also has the potential to foster dependency among students, diminish critical thinking skills, and increase the risk of academic misconduct, such as plagiarism. Furthermore, the Islamic education curriculum has not yet fully adapted to technological developments; the importance of maintaining a balance between technology use and character development; and issues of data security and privacy all pose challenges that must be addressed in the implementation of AI. Therefore, it is necessary to enhance digital competencies, develop adaptive curricula, and strengthen.

2.2 Inquiry-Based Learning

Etymologically, Inquiry-Based Learning (IBL) derives from the word “to inquire,” which means actively participating in the process of asking questions, exploring various sources of information, and conducting research or investigations to gain a deeper understanding. Terminologically, IBL is a structured learning strategy that provides space for student autonomy while requiring analytical, critical, and creative skills in problem-solving. This approach places students at the center of learning activities, while teachers serve as mentors and facilitators who guide the flow of teaching and learning in the classroom. IBL is rooted in the philosophy of constructivism, in which the learning process focuses on students’ active participation in constructing understanding through systematic inquiry. The central tenet of IBL is that knowledge becomes more meaningful and enduring when students discover it for themselves through active mental processes, rather than merely passively receiving facts from educators.

1. Previous Research on IBL

A number of previous studies have demonstrated the effectiveness of the IBL model in improving the quality of learning across various subjects, including Islamic Religious Education. Found that the implementation of IBL had a significant impact on improving the quality of fiqh learning after the COVID-19 pandemic, with students using the IBL model demonstrating better results compared to the group using conventional learning methods. Similarly, in study at SMAN 1 Pangean, demonstrated that the implementation of IBL significantly improved students’ learning outcomes in history, as evidenced by a marked increase in teacher activity, student engagement, and learning achievement. Furthermore, also reported similar results in the application of the guided inquiry model to Islamic Education (PAI) instruction at SMAN 5 Purwokerto, namely an increase in students’ active participation and a better understanding of the material. Nevertheless, there is a research gap that requires attention. Most previous studies remain descriptive in nature and are limited to a single educational level or specific location, so the generalizability of their results still needs to be tested more broadly . The novelty of this study lies in its focus on integrating the IBL model with the local characteristics of the students.

2. In the field of Islamic Religious Education

learning objectives go beyond mere mastery of the subject matter; they are aimed at shaping attitudes, values, and habits that reflect Islamic teachings, while also developing skills that can be applied in daily life. Islamic Religious Education (IRE) instruction that relies solely on rote memorization without deep understanding or connection to reality tends to make students feel bored and unengaged. Therefore, the Inquiry-Based Learning (IBL) model serves as an alternative that positions students at the center of an active and critical learning process, encouraging them to ask questions, investigate, collect data, analyze information, and draw conclusions both independently and in groups. Mastery of Islamic Education (PAI) material through IBL encompasses three aspects simultaneously cognitive, affective, and psychomotor so that students not only understand concepts intellectually but are also able to internalize and practice Islamic values in real life. This has been empirically demonstrated in a study in the 10th-grade class at Pinrang State High School 9, where the implementation of IBL resulted in an increase in students’ average scores from 63.75 on the pre-test to 90.63 on the post-test, proving that the IBL method is effective and suitable for use in PAI instruction.

2.3 Integration of Artificial Intelligence Through Inquiry-Based Learning

The Concept of AI-IBL Integration: The development of Artificial Intelligence (AI) in the 21st century has opened up new opportunities in the field of education, including in the context of Islamic Religious Education (PAI) (Putri et al., 2026). Explain that AI is a technology designed to enable computer systems to mimic human cognitive abilities such as learning, analyzing data, and making decisions; thus, its application in education facilitates the creation of a learning process that is more innovative, interactive, and adaptive to the needs of each student. The integration of AI into PAI instruction is not merely the addition of a technological tool but rather a pedagogical transformation that aligns digital advancements with the goals of Islamic education in shaping a generation that is both knowledgeable and of noble character. Within this framework, IBL emerges as the learning model most compatible with the use of AI, as both place students as active participants who are encouraged to ask questions, investigate, and construct their own knowledge. AI enhances the inquiry process by providing broad access to digital Islamic resources such as Qur'anic exegesis, hadith, and scholarly literature, enabling students to conduct more in-depth and independent investigations. Thus, the integration of AI and IBL in PAI education not only addresses the demands of education in the digital age but also reinforces the meaning of learning as a process of discovery.

1. AI at Every Stage of Inquiry

The integration of AI into every stage of IBL provides concrete support for students' active and independent learning processes. In the first stage presenting students with a problem AI can play a role in providing an initial stimulus in the form of questions, phenomena, or contextual cases relevant to Islamic Education (PAI) material, thereby naturally sparking students' curiosity. In the second stage information gathering and verification AI facilitates students' rapid access to various digital learning resources, including authoritative Islamic references, thereby making the inquiry process richer and more focused. In the third stage experimentation and data processing AI can provide interactive simulations that allow students to explore concepts in a more contextual and practical manner. Next, in the fourth stage formulation of findings AI helps students organize the information they have gathered through digital platforms that support collaboration and the presentation of learning outcomes. Finally, in the evaluation stage, AI-based systems enable more automated, objective, and personalized assessments, allowing teachers to gain a more accurate picture of each learner's progress. Thus, AI functions not merely as a tool but as a pedagogical partner that strengthens each stage of the inquiry process so that learners.

2. Teachers as Murabbi

Although AI offers various conveniences in the learning process, its presence cannot replace the essential role of teachers, particularly in the context of Islamic education (Putri et al., 2026). Emphasize that AI cannot replace the teacher's role in guiding students, especially in moral and spiritual aspects; thus, teachers remain the primary figures in character development and in imparting a correct understanding of Islamic teachings. In the tradition of Islamic education, this role is known as the

concept of the murabbi an educator who not only imparts knowledge but also guides, nurtures the soul, and directs students toward moral maturity in harmony with Islamic values. In the context of AI–IBL integration, the teacher as a murabbi serves as a facilitator who guides students' inquiry process while ensuring that all technology-based learning activities remain grounded in Islamic moral and ethical values. This role is all the more important given that AI has the potential to present information that may not necessarily align with authoritative Islamic scholarly sources; thus, teachers must serve as filters and interpreters of all findings obtained by students during the inquiry process. Thus, the synergy between AI as a tool and the teacher as a murabbi forms a solid foundation for realizing Islamic Education (PAI) that is not only intellectually sound but also morally and spiritually robust.

METHOD

The inclusion criteria for data collection in this research include, first, scientific publications from 2020 to 2026 that discuss the utilization of Artificial Intelligence (AI) in Islamic Education (PAI), the integration of AI technology in the learning process, and the implementation of Inquiry-Based Learning (IBL) to strengthen students' critical thinking skills. This criterion includes studies that examine the concept of AI utilization in education, the positive and negative impacts of AI in Islamic Education learning, AI integration strategies through the IBL model, and the role of IBL in developing students' critical thinking skills.

Second, this research prioritizes scientific articles with a complete structure, including the clarity of the author's name, article title, journal name, publication year, and the availability of full-text manuscripts for analysis. The selected articles are scientific journal publications that discuss the relationship between Artificial Intelligence, Islamic Education, Inquiry-Based Learning, and critical thinking skills.

The exclusion criteria are applied to filter literature that does not align with the research focus and academic quality standards. Publications that do not discuss the utilization of AI in the context of Islamic Education or are not related to the implementation of Inquiry-Based Learning are excluded from the analysis process. Research in the form of theses, dissertations, irrelevant proceedings, and non-scientific sources such as blogs, opinions, or popular articles are not included in this study to maintain the validity and reliability of the data sources. Furthermore, articles that do not provide complete access, lack author or journal identity, or contain insufficient research information are eliminated during the screening and eligibility assessment stages.

This research is a literature review that uses a content analysis approach to analyze previous studies related to the use of Artificial Intelligence in Islamic Education through the Inquiry-Based Learning model. The analysis process is conducted by identifying, categorizing, and interpreting research findings related to AI, IBL, and the strengthening of students' critical thinking skills.

Specifically, the objectives and urgency of this research are formulated into several main research questions as follows:

How is the concept of Artificial Intelligence utilization in Islamic Education learning, and does its implementation provide positive or negative impacts on the learning process? How is Artificial Intelligence integrated through the Inquiry-Based Learning model in Islamic Education learning, and how can the inquiry stages be combined with the use of AI in the learning process? What is the role of Inquiry-Based Learning in strengthening students' critical thinking skills, and to what extent can this learning model improve critical thinking skills in Islamic Education learning? What are the challenges and obstacles in utilizing Artificial Intelligence in Islamic Education learning?

FINDINGS AND DISCUSSION

A. Concept of Using Artificial Intelligence in PAI Learning

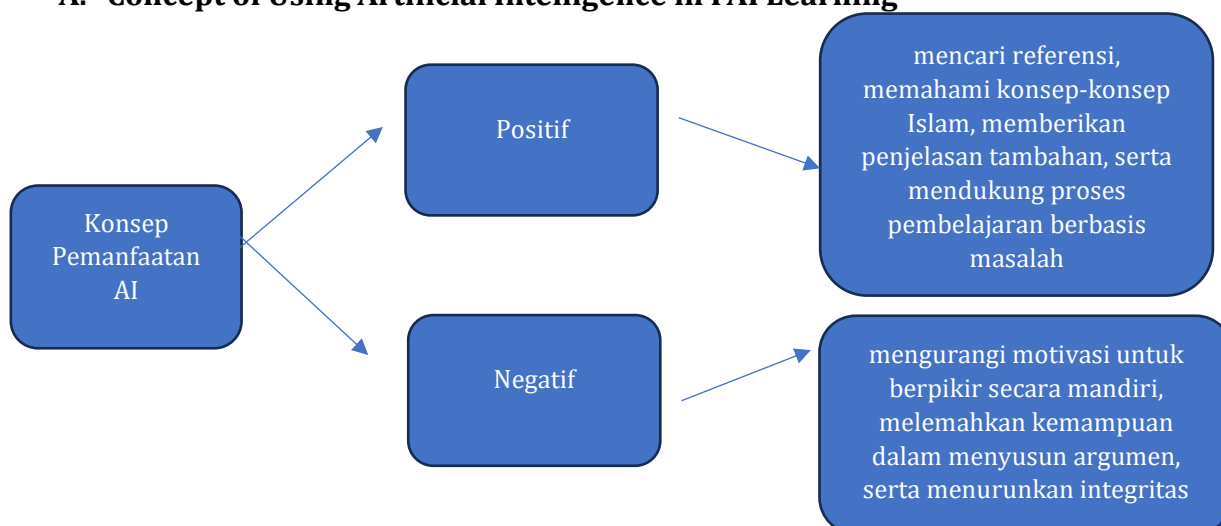


Figure 1. Concept of Using Artificial Intelligence in PAI Learning

Based on a literature review, the trend of using AI in PAI learning shows a positive trend. AI can help students find references, understand Islamic concepts, provide additional explanations, and support the problem-based learning process (Muhammad Aryo Ramadhan, Agus Gunawan, Saddam Lorenza, Zulfa Ainy & Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025). AI supports development more interactive learning content and in-depth data analysis for improvement curriculum (Nur et al., 2024). AI can drive motivation and student engagement, creating a more meaningful and in-depth learning experience. By Overall, the integration of AI in PAI learning has great potential to create a learning environment that is more effective, adaptive, and able to answer educational challenges in the digital era At the moment (Hidayat et al., 2024).

AI increases motivation through personalization of learning and access to extensive sources (Dina1, Amirul Akbar Marfit2, 2025). AI can be an effective tool in encouraging reflective, analytical thinking, and argumentative when used actively and

accompanied by digital literacy adequate (Nur et al., 2024). Thus, AI integration can be an innovative solution that is adaptive to technological developments and the need for Islamic religious education in the digital era (Muhammad Aryo Ramadhan, Agus Gunawan, Saddam Lorenza, Zulfa Ainy & Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025) (Jannah et al., n.d.).

But on the other hand, passive and instant use of AI has the potential to reduce motivation to think independently, weaken the ability to formulate arguments, and reduce student academic integrity (Muhammad Aryo Ramadhan, Agus Gunawan, Saddam Lorenza, Zulfa Ainy & Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025) (Santoso, 2023). Therefore, increasing teachers' digital literacy, strengthening infrastructure, curriculum adaptation, ethical policies, cross-sector collaboration, and inclusive education and sustainability must support AI development (Hidayat et al., 2024) (Hartedi, 2025) (S et al., 2026). Thus, the integration of AI becomes an effective learning innovation if used wisely, purposefully and proportional (S et al., 2026) (Alfayumi, 2025).

B. Integration Of AI Through The IBL Model In Islamic Education (The Inquiry-Based Steps In Incorporating AI)

Digital transformation has radically reshaped the landscape of modern pedagogy. The old educational paradigm, which positioned the teacher as the sole source of academic authority (teacher-centered), has now shifted to an approach that emphasizes students' active independence (student-centered learning). In responding to the challenges of our time, Islamic Religious Education (PAI) is called upon not merely to teach doctrines by rote, but to hone critical, logical, and systematic thinking in order to foster authentic spiritual intelligence (Mahbubah, 2024).

One of the best methodological approaches for achieving this vision is the Inquiry-Based Learning (IBL) model. IBL is designed to stimulate curiosity, develop problem-solving skills, and enhance social and academic interactions among students through a series of scientific inquiry processes (Mahbubah, 2024).

When this IBL model is accelerated by the presence of Artificial Intelligence (AI), it creates a new leap in innovation in the world of Islamic education. In this context, AI serves as a smart assistant and adaptive tool capable of facilitating students' individual learning needs. AI expands access to information beyond the confines of the classroom, while the IBL model ensures that students remain within the framework of critical and methodological thinking (Juliani & Hidayat, 2026).

The following is an expanded narrative analysis of the integration of AI into each stage or step of the inquiry process in a PAI learning scenario (Azizah & Syarif, 2025), (Muzawir Munawarsyah, 2026) :

1. Problem Identification Stage & Contextual Stimulation

The inquiry cycle always begins by presenting students with a phenomenon or stimulus that raises significant questions (cognitive conflict). Dalam pembelajaran PAI konvensional, stimulus sering kali terbatas pada teks bacaan di buku paket.

Melalui integrasi AI, guru dapat bertindak sebagai desainer kurikulum yang dinamis menggunakan AI generatif (Mahbubah, 2024).

The Exploratory Role of AI: Teachers can instruct AI to develop complex yet age-appropriate real-world (contextual) case scenarios. For example, AI can create specific case studies on ethical dilemmas regarding digital Sharia financial transactions (such as the widespread use of "paylater" and digital loans among youth), copyright of digital works from an Islamic legal perspective, or issues of social justice in the modern era.

Pedagogical Impact: The use of this technology helps teachers present the background of a multidimensional issue in a short amount of time. This sparks students' emotional and intellectual interest, encouraging them to examine religious issues not as outdated material, but as real-life situations that require dynamic Islamic jurisprudence (fiqh muamalah) solutions.

2. Question Formulation & Conceptual Negotiation Stage

After being exposed to contextual stimuli, students are required to formulate key questions that will guide their investigation. This stage is often crucial because students frequently struggle to construct scientifically sound questions (HOTS—Higher Order Thinking Skills). (Juliani & Hidayat, 2026).

The Exploratory Role of AI: Here, AI platforms (such as chatbots based on Large Language Models) serve as adaptive dialogue partners. Students can provide prompts in the form of their initial draft questions. For instance, when a student inputs a basic question like "Is spreading hoaxes a sin?", the AI can respond by offering additional perspectives or breaking down the structure of the question into a more precise, measurable, and focused academic question, such as: "How can the principle of tabayyun in Surah Al-Hujurat verse 6 be integrated as a personal algorithm to filter digital misinformation?" **Pedagogical Impact & Teacher Mitigation:** Although highly efficient, this stage carries the greatest risk. AI is prone to "data hallucinations" (such as fabricated hadith quotations, weak chains of narrators/sanad, or incorrect citations). Therefore, close supervision by Islamic Education teachers is absolutely essential. Teachers guide students to conduct rigorous digital cross-checks (tabayyun), ensuring that religious data is verified through authoritative primer texts (like digital libraries of classical tafsir or trusted hadith applications) and accredited scholarly journals.

Pedagogical Impact: This interactive process reduces students' academic anxiety. AI acts as a friendly, one-on-one facilitator that helps translate complex theological, philosophical, or fiqh terms into language that is easier for students to understand, enabling them to formulate meaningful problems.

3. Data Collection & Literature Review

The data collection phase brings scientific research methods (library research) into the classroom. Students are required to track down various naqli sources (the Qur'an and Hadith) as well as aqli sources (scholarly opinions/ijtihad, scientific journals, and sociological data).

The Exploratory Role of AI: AI drives high levels of efficiency in the text data search phase. By using AI-powered academic search engines or automatic summarization tools, students can save hours of time that would otherwise be spent sifting through documents. Furthermore, AI-based adaptive learning systems are capable of identifying students' preferences and learning speeds, then providing recommendations for interpretive texts (tafsir) or articles on Islamic law that align with each individual's cognitive abilities.

Pedagogical Impact & Teacher Mitigation: Although highly efficient, this stage carries the greatest risk. AI is prone to "data hallucinations" (such as fabricated hadith quotations, weak chains of narrators/sanad, or incorrect citations). Therefore, close supervision by Islamic Education teachers is absolutely essential. Teachers guide students to conduct rigorous digital cross-checks (tabayyun), ensuring that religious data is verified through authoritative primer texts (like digital libraries of classical tafsir or trusted hadith applications) and accredited scholarly journals.

4. Data Analysis & Critical-Theological Synthesis

An abundance of data and arguments is meaningless without a process of conceptualization and in-depth analysis. Students are required to compare, critique, and synthesize this data logically, especially when dealing with differences of opinion (ikhtilaf) among scholars. (Hasibuan, 2025), (Mahbubah, 2024).

The Exploratory Role of AI: Students can use AI to identify common threads in complex data. For example, AI can be instructed to systematically classify differences of opinion among the four major schools of Islamic jurisprudence (Mazhab) regarding contemporary issues—such as cryptocurrency trading—based on literature uploaded by students, and then present the results in a comparative summary table.

Pedagogical Impact: The AI-assisted analysis process trains students to think holistically and analytically by mapping out patterns of conceptual comparison. However, the final decisions regarding synthesis, ethical boundaries, and internal reflection remain in the students' hands. Teachers guide students so that their critical thinking is imbued with divine morality (akhlaqul karimah), ensuring that students do not merely view religion as a dry subject of science, but rather as a living spiritual guide (hidayah) for life. (Juliani & Hidayat, 2026), (Mahbubah, 2024), (Hasibuan, 2025).

5. Presentation of Findings & Group Reflection

The inquiry cycle concludes with sharing this new knowledge with the class community, whether through oral presentations, scientific essays, or creative digital dawah projects. (Mahbubah, 2024)..

AI's Exploratory Role: AI facilitates technical aspects related to visualization and language. Students can use an AI-powered presentation generator to design educational infographics for islamic propagation (dawah), or use AI text processing tools to independently proofread the grammar and structure of their PAI research reports before presenting them.

Pedagogical Impact: Presentation sessions and group discussions become more enriching because the content presented by students is much more in-depth, thanks to the AI-assisted exploration conducted in earlier stages. This fosters students' academic confidence. More importantly, this phase transforms the classroom into a space for collective self-evaluation (*muhasabah jama'i*), reflecting on how these academic findings can reinforce their daily spiritual commitments and social responsibility (Mahbubah, 2024).

Analysis of Ethics, Challenges, and the Reconstruction of the Role of Islamic Education Teachers.

The widespread use of AI in the IBL model in Islamic education classes is not immune to the threat of educational distortion. If not guided by moral commitment (*amanah ilmiah*), the integration of this technology may actually give rise to various forms of academic misconduct. Students may be tempted to take shortcuts: having AI instantly provide answers to problem statements, fabricating citations of religious texts, engaging in covert plagiarism, and stifling their own original thought processes due to chronic reliance on technology (Ali et al., 2023), (Juliani & Hidayat, 2026).

In the face of this threat of a digital moral crisis, the role of Islamic Education (PAI) teachers has shifted from that of mere instructors (teachers) to that of mentors of civilization (Murabbifacilitators and spiritual (Muzawir Munawarsyah, 2026), (Juliani & Hidayat, 2026), (Mahbubah, 2024).

1. **Curator of Digital Ethics:** Teachers must teach the concept of Islamic cyber-ethics (ethical conduct in digital media/*akhlak digital*) and emphasize the importance of academic integrity as a direct reflection of faith (*iman*) (Juliani & Hidayat, 2026), (Muzawir Munawarsyah, 2026).
2. **Authentic Evaluator:** Teacher assessment no longer focuses on the final product (since the final product can easily be generated by AI), but rather on tracking students' active inquiry process how they perform *tabayyun*, how they sort through valid data, and how their moral thought processes unfold (Mahbubah, 2024), (Juliani & Hidayat, 2026).
3. **Enhancing the Human Touch:** Artificial intelligence lacks a conscience (*qalb*), empathy, faith, or piety. An affective touch, character guidance, and true spiritual transformation can only be imparted through the exemplary life and sincere devotion of a PAI teacher (Azizah & Syarif, 2025), (Juliani & Hidayat, 2026), (Muzawir Munawarsyah, 2026).

Thus, the judicious integration of AI and the Inquiry-Based Learning (IBL) model will create an ideal Islamic Education (PAI) learning ecosystem for the 21st-century generation: an educational model that fosters not only intellectual excellence but also steadfast faith and moral integrity. (Hasibuan, 2025), (Mahbubah, 2024), (Juliani & Hidayat, 2026).

C. The role of Inquiry-Based Learning (IBL) in strengthening students' critical thinking skills (whether it is effective or less effective)

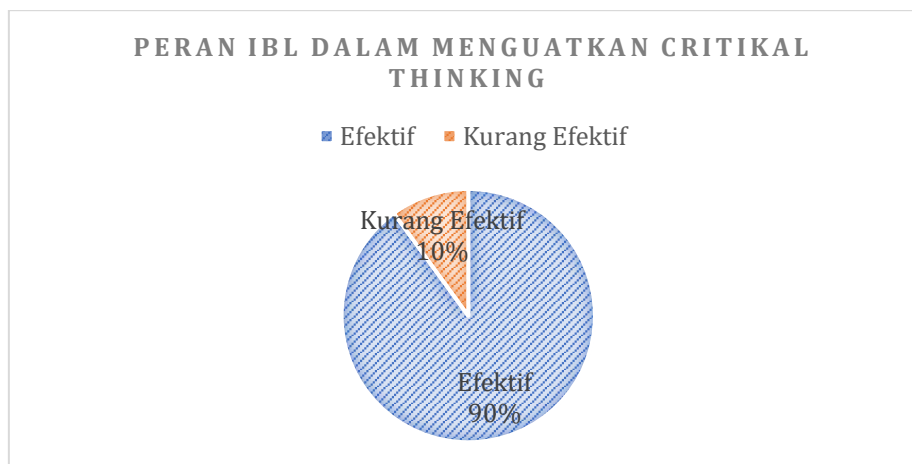


Figure 2. The Role of Inquiry-Based Learning (IBL) in Strengthening Critical Thinking

Inquiry-Based Learning (IBL) can improve students' critical, analytical, and reflective thinking skills in understanding Islamic teachings (Dina1, Amirul Akbar Marfit2, 2025)(Ria Asnani1, Yuli Habibatul Imamah2, 2026)(Santoso, 2023). Inquiry-Based Learning emphasizes the process of applying critical and analytical thinking to discover and identify answers to a problem (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Santoso, 2023)(Utomo, 2020). This learning model encourages students to conduct extensive self-exploration, observe what is happening, develop the desire to take action, ask questions, reach their own conclusions, and compare their findings with other students (Majdi et al., 2025)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Hamid et al., 2025). The implementation of the Inquiry-Based Learning model can teach students to learn independently, allowing them to develop important knowledge and skills rather than simply memorizing a list of information provided by educators (Majdi et al., 2025).

IBL is able to create a more active, participatory, and collaborative learning environment. The Inquiry-Based Learning (IBL) model is a relevant learning approach to address the challenge of low student participation in the learning process (Radinata & Wijaya, 2025)(Dina1, Amirul Akbar Marfit2, 2025)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025). This approach positions students as active learners who are encouraged to ask questions, explore, and discover knowledge independently through scientific thinking processes (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Dina1, Amirul Akbar Marfit2, 2025). Through IBL, students are not only directed to understand concepts theoretically but are also trained to develop critical, analytical, and reflective thinking skills that are highly needed in the 21st century (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025).

The Inquiry-Based Learning approach in Islamic Religious Education (PAI) provides a more interactive and student-centered learning method, enabling students to think critically, analyze, and find solutions to the problems they encounter (Nur

Wahyuni, Wiwin Fachrudin Yusuf, 2025). By applying inquiry principles, students not only understand religious concepts theoretically but are also able to connect them with real-life situations (Dina1, Amirul Akbar Marfit2, 2025)(Ria Asnani1, Yuli Habibatul Imamah2, 2026)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025). Although this approach has challenges in its implementation, such as the need for qualified teacher skills and student readiness, it still provides many benefits, especially in building a deeper and more applicable understanding of religion. Therefore, Inquiry-Based Learning can be an effective strategy for improving the quality of PAI learning, making it more meaningful (Dina1, Amirul Akbar Marfit2, 2025)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025).

Elaboration Aspect	Explanation in the Context of Islamic Education	Relationship With References
Islamic Epistemology	IBL is in line with the Islamic traditions of <i>tafakkur</i> , <i>tadabbur</i> , and <i>ijtihad</i> . Critical thinking processes that are already inherent in Islamic scholarly traditions, not merely an imported pedagogical concept.	Strengthens the argument that the process of independent exploration to find answers to problems (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Santoso, 2023)(Utomo, 2020) is consistent with the Islamic way of thinking.
Contextualization of Values	Students do not only understand Islamic teachings textually but also conduct contextual interpretations of current issues such as religious moderation, digital ethics, and social tolerance.	Supports the finding that students are able to connect religious concepts with real-life situations (Dina1, Amirul Akbar Marfit2, 2025)(Ria Asnani1, Yuli Habibatul Imamah2, 2026)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025).
Shift in the Teacher's Role	Islamic Education teachers shift from being transmitters of knowledge to facilitators of thinking processes, encouraging a more reflective and personal internalization of values rather than only memorization or indoctrination.	Related to the creation of an active, participatory, and collaborative learning environment (Radinata & Wijaya, 2025)(Dina1, Amirul Akbar Marfit2, 2025)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025).
Critical Thinking vs. Fixed Islamic Beliefs	Teachers need the competence to distinguish areas that are open to critical exploration (contextual fiqh, Islamic civilization history) and areas that are <i>qath'i</i> (fundamental beliefs) that cannot be debated.	Responds to implementation challenges related to the need for adequate teacher skills (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Dina1, Amirul Akbar Marfit2, 2025).
Students' Psychological Readiness	Students who are accustomed to passive/repetitive religious learning need gradual scaffolding to adapt to the demands of exploration, questioning, and	Related to the process of independent exploration, observation, and making conclusions by themselves (Majdi et al., 2025)(Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025)(Hamid et al.,

Elaboration Aspect	Explanation in the Context of Islamic Education	Relationship With References
	drawing their own conclusions.	2025).
21st- Century Skills & Insan Kamil	IBL connects global competencies (4C: critical thinking, communication, collaboration, and creativity) with the goals of holistic Islamic education, namely developing <i>insan kamil</i> who are spiritually and intellectually excellent.	Relevant to the need for critical, analytical, and reflective thinking skills in the 21st century (Nur Wahyuni, Wiwin Fachrudin Yusuf, 2025) to create more meaningful Islamic Education learning (Dina1, Amirul Akbar Marfit2, 2025).

Figure 3. Elaborasi Inquiry-Based Learning (IBL) dalam Islamic Education

D. Challenges of Artificial Intelligence Implementation in Islamic Religious Education (PAI)

Even though Artificial Intelligence (AI) offers many opportunities to improve the quality of Islamic Religious Education (PAI), its implementation still faces several challenges that need serious attention. One of the main challenges is the low level of digital literacy among teachers and students. Many religious education teachers still lack the necessary skills to use AI technology effectively in their teaching, so its use remains limited to just searching for information and hasn't been systematically integrated into the learning process. This situation shows a gap between technological advancements and the readiness of human resources to effectively use AI in Islamic religious education. Besides that, Aulia Putri and others (2026) also stated that the limited digital literacy of educators is the main obstacle in integrating AI into Islamic education (Putri et al., 2026).

The next challenge is the limited technology infrastructure and the uneven availability of support tools for AI-based learning. Implementing AI requires adequate digital devices and an internet connection, but not all educational institutions have these facilities. Muhamad Lutfi Alfayumi and others (2025) found that the use of AI in religious education learning at MAN 1 Garut is not yet working very well. Journal 7 because the technology infrastructure is not evenly distributed and there is a lack of regulations governing its use. Similar findings were presented by Muhammad Rizqi Fauzi and others in 2025, who stated that unequal access to technology infrastructure is one of the main obstacles in integrating AI into the assessment of PAI learning (Fauzi & Zahro, 2025).

Other than technical factors, there are also concerns about students becoming too dependent on technology. Using AI without supervision can reduce students' independence in learning and weaken their ability to think critically. Huda and Suwahyu (2024) explain that dependence on technology is one of the negative effects that should be anticipated when using AI in Islamic Religious Education. A similar finding was also reported by Alfayumi et al.(2025), who stated that excessive use of

AI can potentially reduce students' independent learning abilities if not supported with intensive guidance from teachers (Alfayumi, 2025).

Along with that, the aspects of ethics and data security present another important challenge. Using AI in Islamic education isn't just about using technology; it also needs to consider Islamic values like honesty, responsibility, and trustworthiness. Aulia Putri and others (2026) state that the use of AI should be balanced with the strengthening of Islamic ethics to ensure that technology does not shift the main goal of Islamic education, which is to shape the character and spirituality of students. Senada dengan itu, Muh. Asroruddin Al Jumhuri (2025) mentions that issues such as data security, the dehumanization of education, and threats to spiritual values are challenges that need to be anticipated when integrating AI into Islamic religious education learning (Asroruddin & Jumhuri, 2025).

So, using AI in religious education still faces many challenges, starting from low digital literacy, limited infrastructure, the risk of becoming too dependent on technology, up to issues related to ethics and data security. Therefore, it is necessary to improve teachers' digital skills, provide adequate infrastructure, create clear policies, and instill Islamic values so that AI can be used wisely and still support the goals of Islamic education in shaping students who have good morals and strong critical thinking abilities.

CONCLUSION

The integration of Artificial Intelligence (AI) within the Inquiry-Based Learning (IBL) model offers a transformative paradigm shift for Islamic Religious Education (PAI), effectively transitioning classrooms from conventional, teacher-centered rote memorization into dynamic, student-centered ecosystems. By serving as an adaptive dialogue partner and a highly efficient research assistant, AI accelerates every stage of the scientific inquiry process, helping students construct higher-order questions, analyze naqli and aqli text data, and design innovative digital propagation (da'wah) tools. However, this technological leap is accompanied by critical educational distortions, including low digital literacy among educators, infrastructure disparities, risks of AI data hallucinations, and potential academic misconduct that threatens students' critical thinking independence.

To mitigate these challenges, the role of the PAI teacher must be fundamentally reconstructed into a Murabbi—a spiritual mentor, digital ethics curator, and authentic evaluator who instills the pivotal prophetic principle of tabayyun (rigorous verification) and akhlaq digital (cyber-ethics). Ultimately, the combination of AI and IBL serves as an innovative, effective solution for 21st-century Islamic education only if it is deployed wisely, purposefully, and proportionally. The insights from this study imply that technological optimization in religious schooling must always be grounded in spiritual integrity and divine morality (akhlaqul karimah). Therefore, it is highly recommended that educational institutions implement clear ethical policies, enhance comprehensive digital literacy programs for teachers, and provide equitable infrastructure. Future studies should focus on empirical and field-based research across diverse educational settings to practically

measure the impact of this integrated AI-IBL framework on student spiritual development and real-world critical thinking skills.

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