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Artificial Intelligence in Islamic Education: Student Strategies and Challenges in Pedagogical Development

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ABSTRACT

Artificial Intelligence is developing rapidly and is beginning to be widely adopted in higher education, including as a learning tool. However, the integration of AI into the realm of Islamic religious studies raises a number of issues for students, particularly regarding the validity and contextualization of AI responses to religious material rich in historical, linguistic, and spiritual meaning. This study aims to understand how students in the Bachelor of Islamic Religious Education program utilize AI as a tool to improve their pedagogical competence, as well as to identify their perspectives, support systems, and the obstacles they face in this process. Using a qualitative approach with a case study design, data were collected through in-depth interviews, participant observation, and document analysis. The results show that students actively use natural language processing-based platforms—AI technology that enables computers to understand, interpret, and respond to human language, both written and spoken. They also utilize global online learning platforms to broaden their horizons and collaboratively for academic discussions. However, doubts about the AI's responses arise due to its limitations in understanding the cultural, historical, and linguistic context of Arabic, particularly in Qur'anic interpretation and Islamic jurisprudence. To verify this, students compare the AI's results with classical literature, academic references, and direct consultations with experts. Key challenges identified include the gap between Islamic spiritual values and the formal logic of AI, limited digital access in remote areas, low digital literacy, and concerns that reliance on AI could diminish students' critical thinking skills regarding religious texts. These findings provide important contributions to the development of more inclusive and effective learning strategies, considering the thoughtful and contextual integration of AI into religious education in the digital age.

Keywords*: student preference, Islamic religious education, artificial intelligence, professional competence.*

How to Cite :

INTRODUCTION

In Indonesia, the development of AI is greatly influenced by high internet penetration, with 213 million internet users in 2023 or around 77% of the population [1]. Indonesia is even recorded as the third country with the most AI users in the world, reaching 1.4 million visits. Only 0.7 million adrift of India in second place, this shows a strong interest in this technology [2]. An Ipsos survey shows that 78% of Indonesian respondents, consisting of businessmen, students, and educated people aged 21–74 years, consider AI to be more beneficial than risky [3]. On the other hand, Malaysia has also shown significant AI adoption, with 84% of employees already using AI in their daily activities, higher than the global average of only 75% [4]. However, about one-fifth of the working population in Malaysia has never used AI [5]. According to Oxford Insight data, Indonesia is ranked 40th, while Malaysia is ranked 23rd in AI readiness [6]. This amount of potential attracts foreign investment to Malaysia, such as ByteDance which invested USD 350 million and Microsoft which bought land worth USD 95 million for data centers [7].

The development of Artificial Intelligence (AI) has brought significant transformations in education in the ASEAN region, including in personalized learning, automated assessment systems [8], and increased e-learning interactivity [9], as reinforced by the findings of Csizmadia [10], which demonstrated improved learning quality through AI. However, in the specific context of Islamic Religious Education (PAI), the use of AI by students as a tool for developing professional teacher competency remains a crucial research gap. This study aims to fill this gap by theoretically focusing on the interaction between Islamic pedagogical principles and the logic of AI technology, and exploring students' preferences in selecting, using, and validating religious information from AI platforms, a dynamic that remains largely uncharted empirically and conceptually in

[1] Wilson Rajagukguk et al., "Demographic and Socioeconomic Determinants Affecting Uses of the Internet in Indonesia," *Population and Economics* 8, no. 2 (2024): 82–96, https://doi.org/10.3897/popecon.8.e108914.

[2] databoks.katadata.co.id, "Indonesia, the World's 3rd Largest Contributor of AI Application Visits | Pusat Data Ekonomi Dan Bisnis Indonesia | Databoks," accessed September 14, 2025, https://databoks.katadata.co.id/en/technology-telecommunications/statistics/a49ed3eb121983b/indonesia-the-worlds-3rd-largest-contributor-of-ai-application-visits.

[3] Monavia Ayu Rizaty, "Survei Ipsos: Penduduk dengan Pendapatan Teratas Lebih Bahagia," Data Indonesia: Data Indonesia for Better Decision. Valid, Accurate, Relevant, accessed September 14, 2025, https://dataindonesia.id/varia/detail/survei-ipsos-penduduk-dengan-pendapatan-teratas-lebih-bahagia.

[4] Noorbaiti Mahusin et al., "Malaysia Public Sector Challenges of Implementation of Artificial Intelligence (AI)," *IEEE Access* 12 (2024): 121035–51, https://doi.org/10.1109/ACCESS.2024.3448311.

[5] Miss Nur Anis Izzati Che Mut et al., "395 - Artificial Intelligence in Healthcare: Evaluating the Knowledge and Awareness Among Healthcare Professionals in a Hospital Setting in Malaysia," *Journal of Medical Imaging and Radiation Sciences*, ISRRT World Congress Proceedings 2024, vol. 55, nos. 3, Supplement (2024): 101677, https://doi.org/10.1016/j.jmir.2024.101677.

[6] Qonita Azzahra, "Indonesia Kalah dari Thailand dan Malaysia dalam Manfaatkan AI," tirto.id, accessed September 14, 2025, https://tirto.id/indonesia-kalah-dari-thailand-dan-malaysia-dalam-manfaatkan-ai-g2pm.

[7] Mahusin et al., "Malaysia Public Sector Challenges of Implementation of Artificial Intelligence (AI)."

[8] Thanh Luan Nguyen et al., "Critical Factors Affecting the Adoption of Artificial Intelligence: An Empirical Study in Vietnam," *The Journal of Asian Finance, Economics and Business(JAFEB)* 9, no. 5 (2022): 225–37, https://doi.org/10.13106/jafeb.2022.vol9.no5.225.

[9] Redaksi, "Ramai-Ramai Asing Serbu Malaysia dibanding RI, Ternyata Ini Alasannya," CNBC Indonesia, accessed September 14, 2025, https://www.cnbcindonesia.com/tech/20241013163735-37-579208/ramai-ramai-asing-serbu-malaysia-dibanding-ri-ternyata-ini-alasannya.

[10] Andrew Csizmadia et al., "Integrating the Constructionist Learning Theory with Computational Thinking Classroom Activities," *Informatics in Education - An International Journal* 18, no. 1 (2019): 41–67.

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contemporary religious education literature.

The selection of the Islamic Religious Education Study Program at UIN Walisongo Semarang as the research locus was based on critical considerations: not only its academic reputation as a major producer of future religious educators, but also its diverse student backgrounds and access to adequate digital infrastructure, making it an ideal social laboratory for observing the adoption of technology in Islamic education. The contribution of this research is threefold: empirically, it provides original data on patterns of AI use by Islamic Religious Education students; theoretically, it expands the discourse on religious education by integrating the latest educational technology perspectives; and practically, it provides curricular and pedagogical recommendations that enable the integration of AI without sacrificing the integrity of Islamic values, thus maintaining the relevance and quality of future religious educators in the digital era.

RESEARCH METHODS

This research employs an in-depth case study design with a focus on a specific context: students in the Islamic Religious Education (PAI) Study Program who actively use Artificial Intelligence (AI) in their learning. This design allows for a holistic exploration of the dynamics of AI use, including motivations, challenges, and its impact on professional competency. The case study was chosen because it captures the complexity of the phenomenon in a natural setting, in accordance with Baskara [11] principles emphasizing contextual depth. Informants were selected transparently using objective and measurable criteria: (1) active students in semesters 4–8, (2) AI users at least 2–3 hours per day for academic assignments, (3) willing to provide written consent for data recording and publication, and (4) having actual experience using at least two AI platforms (e.g., educational chatbots or text analysis tools). These criteria were verified through an initial survey and preliminary interviews. The ten selected informants were coded PA1–PA10 to maintain confidentiality. This transparency ensures that the sample is not the result of researcher bias but rather a true representation of the target population based on behavioral indicators and concrete experiences.

Data collection was conducted through three stages: semi-open, structured interviews, participant observation, and analysis of supporting documents (assignment notes, written reflections). The first stage of interviews (a 2-hour, 43-minute group discussion) mapped types of AI and common experiences; the second stage (15-minute individual interviews per informant, totaling 150 minutes) explored motivations and personal challenges; and the third stage included group discussions and data validation. Data validation was designed to foster reflection and correction: after the interview transcripts were compiled, all informants were given access to review, correct, or add meaning to their statements (member checking). This process not only verified accuracy but also prompted informants' reflection on their experiences, often resulting in in-depth clarifications or substantive corrections. Data triangulation was conducted by matching

[11] Sasa Baskarada, "Qualitative Case Study Guidelines," SSRN Scholarly Paper no. 2559424 (Social Science Research Network, October 19, 2014), https://papers.ssrn.com/abstract=2559424.

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interview findings with observational evidence (e.g., recordings of AI use during religious text analysis) and supporting documentation. Theoretical triangulation was also applied by referencing current literature on AI in education to strengthen interpretations. This validation created a feedback loop that strengthened the credibility and depth of the findings.

Table 1. Informan Profile

No	Initials	Semester	Age	Study program
1	PA1	4	19	Islamic Religious Education
2	PA2	4	21	Islamic Religious Education
3	PA3	4	20	Islamic Religious Education
4	PA4	6	22	Islamic Religious Education
5	PA5	6	20	Islamic Religious Education
6	PA6	6	20	Islamic Religious Education
7	PA7	6	22	Islamic Religious Education
8	PA8	6	21	Islamic Religious Education
9	PA9	8	22	Islamic Religious Education
10	PA10	8	25	Islamic Religious Education

Data analysis strictly followed Miles and Huberman's [12] model in three iterative stages: data reduction, data presentation, and conclusion drawing. In the reduction stage, the researcher openly coded interview transcripts, field notes, and documents to identify key themes such as "AI as an efficiency tool," "academic ethics concerns," or "transformation of pedagogical competencies." These themes were then categorized and refined based on their frequency of occurrence and contextual significance. The data presentation stage was conducted through descriptive narratives rich with direct quotes from informants, accompanied by matrix tables mapping the relationships between themes and data sources. This presentation allowed for visualization of patterns and contradictions in the data. In the conclusion stage, the findings were linked back to the research objectives and the initial theoretical framework. This process was reflective: the researcher repeatedly questioned whether the findings answered the research questions, whether there were any interpretive biases, and how new findings extended or corrected initial understandings. The final conclusions not only shed light on preferences for AI use but also reflect on its transformational implications for the professional identity of Islamic Religious Education students in the digital age.

[12] Michael Huberman and Matthew B. Miles, *The Qualitative Researcher's Companion* (SAGE, 2002).

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RESULT AND DISCUSSION

RESULT

Artificial Intelligence Platforms Used to Improve Professional Competencies

This study found that the AI platform used by students of the Islamic Education Undergraduate Program to improve new professional abilities is limited to Natural Language Processing (NLP) platforms in the form of CHAT GPT, Qwen 2.5, and Gemini, as well as Coursera and Edmodo learning platforms, to improve the competence of Islamic professionals in accordance with certain indicators. Extensive and in-depth mastery of subject matter is supported by CHAT GPT, Qwen 2.5, and Gemini through the provision of accurate information and trusted references on complex Islamic concepts. Coursera complements this with Islamic studies courses from a global perspective, while Edmodo facilitates collaborative discussions to enrich understanding. For self-development, the AI platform provides self-study guidance, while Coursera provides professional development courses such as time management and leadership, and Edmodo supports collaboration in learning projects. In understanding the structure of scientific methodology, AI platforms explain research approaches, Coursera offers formal methodology courses, and Edmodo is used to share learning outcomes. To understand the disciplines of subject matter, AI platforms integrate Islamic science with other disciplines, Coursera provides cross-disciplinary courses, and Edmodo becomes a forum for cross-perspective discussions. Knowledge of teaching methods is enhanced by AI platforms through innovative ideas, Coursera through effective teaching strategies, and Edmodo through virtual classroom simulations. In classroom action research, AI platforms provide systematic guidance, Coursera provides related courses, and Edmodo facilitates the sharing of research results.

In the Islamic Education Psychology course, students utilize ChatGPT to deepen their understanding of psychological theories within an Islamic context, as acknowledged by PA1: “CHAT GPT helped me understand the theory of behaviorism in the context of Islamic education.” They also use it to analyze classroom learning cases in pesantren (“I can discuss the case of children who have difficulty focusing with the help of CHAT GPT,” said PA2), design motivation strategies based on Islamic values (“CHAT GPT provides ideas on how to apply motivation theory in character education,” noted PA3), formulate research hypotheses for group assignments (“We used CHAT GPT to formulate a research hypothesis about the influence of the learning environment on student motivation,” explained PA4), comprehend moral development theory (“CHAT GPT explains the relationship between Kohlberg's theory and Islamic values very well,” stated PA5), and apply Vygotsky’s theory in the collaborative context of pesantren (“CHAT GPT has been very helpful for me in understanding the application of Vygotsky's theory...” added PA6). Meanwhile, in the Hadith course (4th semester of the S1 Islamic Religious Education Program), observations conducted on February 2, 2025, revealed that Qwen 2.5 has become a significant learning tool, assisting students in understanding hadith sanad and matan as well as their historical background (as PA8 shared), critically analyzing hadiths of questionable authenticity using reliable references (PA9), compiling thematic academic papers (PA10), grasping the relevance of hadiths on character education and learning ethics (PA2, PA3), and studying hadith research

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methodology in greater depth (PA4). Overall, “Qwen 2.5 is a very useful tool for students to explore the deep meaning of the hadiths of the Prophet Muhammad PBUH comprehensively.”

This research also found that Gemini is also the main tool in studying the History of Islamic Civilization. "Gemini helped me understand the role of the Abbasid Dynasty in the development of science," PA3 said. Students often use this platform to explore major figures in Islamic history. "I learned about Al-Farabi's contribution to philosophy through Gemini," PA4 added. Gemini also helps students understand the geographical and political context of Islamic civilization. "Gemini provides an overview of how Baghdad's location affects scientific progress," PA5 said. In group assignments, students use Gemini to compile a historical timeline. "We made a timeline of the development of Islamic civilization with the help of Gemini," explained PA6. This platform is also used to understand the interaction between Islamic and Western civilizations. "Gemini explains the relationship between Islamic civilization and the European Renaissance," PA7 said. Finally, PA8 added, "Gemini is very helpful in understanding the impact of Islamic civilization on the development of modern science." Gemini provides new insights into Islamic history that are relevant to the contemporary world. For example, PA9 mentions that this platform helps understand the role of the Umayyad Dynasty in the expansion of Islam. "I use Gemini to explore the success factors of the Umayyad Dynasty," he said. PA10 added that Gemini also helps them understand the social context of Islamic civilization.

The AI-integrated tool used is Coursera, they use it as an important learning resource in the Philosophy of Islamic Education course. "I learned about the philosophy of Islamic education through a global course on Coursera," PA9 said. Students often use these platforms to understand the concepts of educational philosophy from a cross-cultural perspective. "Coursera helped me compare Islamic educational philosophy with Western philosophy," PA10 adds. The platform is also used to explore contemporary educational theories. "I learned Paulo Freire's theory through a course on Coursera," PA1 said. In the final project, students utilize Coursera to compile an analysis of the philosophy of education. "I wrote an essay on the philosophy of inclusive education with references from Coursera," PA2 explained. Coursera also helps students understand the integration of Islamic values in modern education. "Coursera provides insight into how Islamic values can be applied in the contemporary education system," PA3 said. Lastly, PA4 adds, "Coursera is very useful in understanding the evolution of Islamic educational philosophy." Coursera opens up new horizons in understanding the philosophy of education universally. For example, PA5 mentions that this platform helps understand the role of philosophy in shaping students' characters. "I use Coursera to explore the application of educational philosophy in the context of Islam," he said. PA6 added that Coursera also helps them understand the relevance of educational philosophy in the modern world. "This platform provides guidance on how educational philosophy can be integrated with technology," he said. Thus, Coursera becomes a very useful tool in learning the philosophy of Islamic education.

The use of AI such as CHAT, GPT, and Gemini further enriches Hadith learning. "CHAT GPT helped me understand the social context of the hadith about zakat," said PA5. Students often use this platform to analyze hadiths related to education. "Gemini gave a detailed explanation of

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the hadith on the ethics of learning," PA6 added. AI is also used to compare hadith with other sources. "I compared the hadith about justice with the verses of the Qur'an using CHAT GPT," said PA7. In group discussions, students use AI to formulate arguments. "We use Gemini to discuss the validity of hadith on leadership," PA8 explained. This platform also helps students understand the methodology of hadith research. "CHAT GPT explains the steps to verify hadith very well," said PA9. Lastly, PA10 added, "AI is very helpful in understanding the application of hadith in modern life." AI is an important tool in exploring the meaning and relevance of hadith in the digital era. For example, PA1 mentions that CHAT GPT helps understand the relationship between hadith and moral values. "I use CHAT GPT to explore hadith applications about hard work in education," he said. PA2 added that AI also helps them understand the historical context of the hadith. "This platform provides information about the background of hadith about zakat," he said. Thus, AI is a very useful tool in studying hadith comprehensively.

Qween 2.5 and Coursera are also used in helping to study Islamic Educational Psychology courses. "Qwen 2.5 helped me understand the theory of learning in an Islamic context," PA1 said. Students often use this platform to analyze learning cases in madrasas. "Coursera provides guidance on the application of Vygotsky's theory in Islamic education," PA2 added. AI is also used to design student motivation strategies. "I used Qwen 2.5 to design a motivational program based on Islamic values," said PA3. In group assignments, students use AI to compile research reports. "We used Coursera to formulate research methods on learning motivation," PA4 explains. The platform also helps students understand the theory of moral development. "Qwen 2.5 explains the relationship between Kohlberg's theory and Islamic values," PA5 said. Finally, PA6 added, "AI is very helpful in understanding the application of educational psychology in the context of Islam." AI helps students integrate psychological theory with Islamic values.

PA7 revealed, "I discussed the Umayyad Dynasty through Edmodo." Students often use this platform to share references about major figures in Islamic history. "Edmodo helped us share articles about Al-Khwarizmi," PA8 added. This platform is also used to compile historical timelines. "We made a timeline of the development of Islamic civilization through Edmodo," said PA9. In the final project, students use Edmodo to collaborate. "We compiled a paper on the interaction of Islamic and Western civilizations through Edmodo," explained PA10. Edmodo also helps students understand the geographical context of Islamic civilization. "The platform provides insight into the location of Baghdad and its impact on science," PA1 said. Finally, PA2 added, "Edmodo is very useful in understanding the impact of Islamic civilization on the modern world." Edmodo facilitates collaboration and in-depth exploration of history. For example, PA3 mentioned that this platform helped them discuss Al-Farabi's contributions to philosophy. "I use Edmodo to share my views on the relevance of Al-Farabi's thought in modern education," he said. PA4 added that Edmodo also helped them understand the interaction between Islamic and European civilizations. "This platform provides information about how Islamic civilization influenced the European Renaissance," he said. Thus, Edmodo has become a very useful tool in studying the history of Islamic civilization.

Edmodo is an important collaborative tool in studying Islamic Educational Psychology. "I

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discussed the theory of learning in the context of Islam through Edmodo," said PA5. Students often use this platform to share references about learning cases in madrasas. "Edmodo helps us share articles about students' motivation to learn," PA6 adds. The platform is also used to compile research reports. "We compiled a research report on learning motivation through Edmodo," said PA7. In the final project, students use Edmodo to collaborate. "We compiled a paper on the application of Vygotsky's theory in Islamic education through Edmodo," explained PA8. Edmodo also helps students understand the theory of moral development. "This platform provides insight into the relationship between Kohlberg's theory and Islamic values," PA9 said. Finally, PA10 added, "Edmodo is very useful in understanding the application of educational psychology in the context of Islam." Edmodo facilitates productive collaboration and discussion. For example, PA1 mentioned that this platform helps them discuss the application of behaviorism theory in Islamic education. "I use Edmodo to share my views on how to apply behaviorism theory in pesantren classes," he said. PA2 added that Edmodo also helps them understand the relevance of educational psychology in the modern world. "This platform provides information on how psychological theory can be integrated with technology," he said. Thus, Edmodo is a very useful tool in studying the psychology of Islamic education.

In addition, Coursera is also an important learning resource in the History of Islamic Civilization course. "I learned about the Abbasid Dynasty through a course on Coursera," PA1 said. Students often use this platform to understand the geographical context of Islamic civilization. "Coursera helped me understand the location of Baghdad and its impact on science," PA2 added. The platform is also used to analyze major figures in Islamic history. "I learned about Al-Farabi's contributions to philosophy through Coursera," PA3 said. In group assignments, students use Coursera to compile a timeline. "We made a timeline of the development of Islamic civilization with references from Coursera," explained PA4. Coursera also helps students understand the interaction between Islamic and Western civilizations. "This platform explains the relationship between Islamic civilization and the European Renaissance," PA5 said. Lastly, PA6 adds, "Coursera is very useful in understanding the impact of Islamic civilization on the modern world." Coursera opens up insights into the history of Islam globally. For example, PA7 mentions that this platform helps them understand the role of the Umayyad Dynasty in the expansion of Islam. "I use Coursera to explore the success factors of the Umayyad Dynasty," he says. PA8 added that Coursera also helped them understand the social context of Islamic civilization. "This platform provides information on how Islamic societies live in harmony with other cultures," he said. Thus, Coursera becomes a very useful tool in studying the history of Islamic civilization.

Students' Views on the Services Provided by Artificial Intelligence in the Aspect of Religious Science

This study shows that students' views on the services provided by Natural Language Processing (NLP) models such as CHAT GPT, QWEN 2.5, and Gemini have significant doubts, especially in the context of improving the professional knowledge of prospective Islamic education teachers. These doubts arise because the NLP model is often not entirely accurate when

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conveying information related to religious sciences that are loaded with Islamic postulates and texts. For example, in explaining the laws of fiqh or interpretation of Qur'anic verses, this model can provide inappropriate answers or even misinterpretations. This is due to the limitations of the model in understanding the cultural, historical, and complex contexts of the Arabic language. In addition, the NLP model also cannot replace the learning process that involves hands-on practice, such as tajweed training that relies on sound. Tajweed is a science that requires listening and repetition of the practice of reading, something that text-based technology alone cannot accommodate. For example, students cannot learn how to read "idgham" or "iqlab" only from the explanatory text generated by AI. This limitation raises further doubts regarding the effectiveness of the use of NLP in Islamic education, since the spiritual and moral aspects that are at the core of religious learning are difficult to understand in depth without an empathetic and experienced human touch. Therefore, while NLP can be helpful in certain ways, its use needs to be limited and accompanied by supervision and human intervention to ensure the accuracy and relevance of the information provided.

The findings of this study confirm whether Islamic Religious Education (PAI) students face doubts in utilizing artificial intelligence (AI) to hone their professional skills, especially in the context of Islamic education. One of the main concerns is the accuracy of the religious information provided by the AI, as the system lacks a deep understanding of Arabic as the primary source language of Islamic teachings. This can lead to misinterpretation of Qur'anic verses or hadiths of the Prophet, which can be potentially misleading if used unsupervised. In addition, AI is also considered to have limitations in conveying the spiritual aspects and moral-ethical dimensions of Islamic teachings. Spirituality, which is abstract and profound, is difficult to represent through algorithms or natural language processing (NLP) models. Likewise, the practice of worship is highly dependent on understanding the cultural, historical, and application of sharia law appropriately; AI has not been able to completely replace the role of humans in this regard. For example, in teaching tajweed, AI can fail to emphasize the nuances of pronunciation that are only understood through direct interaction between teachers and students. Therefore, although AI offers great potential in learning, PAI students feel the need to maintain human supervision to ensure that religious values are conveyed correctly, contextually, and meaningfully. The presence of AI should be seen as an aid, not a substitute, in an effort to develop the professionalism of Islamic education.

Students' doubts about the accuracy of religious information generated by NLP models such as CHAT GPT, QWEN 2.5, and Gemini are very reasonable because often the answers given are incorrect or even misinterpreted. "This model often gives a wrong interpretation of the verses of the Qur'an," PA1 said. For example, in explaining Surah Al-Baqarah verse 282 about witnesses in economic transactions, the NLP model can mistakenly interpret that the number of witnesses should always be two men without considering the social context of the time. PA2 mentions, "I have seen AI interpret the hadith on zakat as an absolute obligation for all Muslims without exception." This shows the model's lack of understanding of the historical context. PA3 added, "AI also often misinterprets Bukhari's hadith about congregational prayer, which ignores

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emergency conditions such as illness or safar." PA4 highlights that the NLP model cannot distinguish between qath'i and zhanni postulates, as in Surah An-Nisa verse 34 about the husband's leadership in the household. "AI only provides textual answers without understanding the deep meaning," said PA5. PA6 emphasized, "In the interpretation of Surah Al-Maidah verse 3, AI wrongly associates the prohibition of eating pork with purely hygienic reasons, even though there is a broader spiritual dimension." This mistake shows how important human intervention is to ensure a correct understanding of Islamic texts.

Arabic is a very specific language, and NLP models often fail to understand its complexity, especially when it comes to literal versus metaphorical meaning. "AI cannot distinguish between literal and metaphorical meanings in the Qur'an," said PA7. For example, in Surah Al-Ikhlas, the phrase "Lam yalid wa lam yulad" is often interpreted literally without understanding its theological implications. PA8 added, "AI is also wrong in understanding the word 'qurba' in Surah Al-Hajj verse 37, which refers to spiritual closeness, not just physical closeness." PA9 mentions that in the interpretation of Surah Al-Baqarah verse 185, AI misinterprets the word 'hudan' as a practical guide only, without understanding its spiritual aspect. PA10 highlights that AI cannot understand the difference between the words 'shiraath' and 'sabillah', as in Surah Al-Fatihah verse 6. "AI only provides answers based on a dictionary without understanding the context of its use," PA1 said. PA2 added, "In the hadith about fasting, AI misinterprets the word 'siyam' as simply suppressing hunger, without understanding the dimension of his worship." This inability shows that the NLP model is not yet fully ready for use in Islamic education without human supervision.

The spiritual aspect of Islam is difficult to understand by the NLP model because of its lack of understanding of human emotions and the dimension of morality. "AI cannot explain the concept of piety in a way that touches the heart," PA3 said. For example, in Surah Al-Baqarah verse 177, AI only provides textual explanations without describing how piety is reflected in daily life. PA4 added, "AI also cannot explain the hadith about the love of Allah in Sahih Muslim, which requires a deep understanding of man's relationship with the Creator." PA5 mentions that in the interpretation of Surah Ar-Rahman, AI fails to capture the literary beauty and spirituality of these verses. "AI only provides literal translations without touching the aesthetic dimension," said PA6. PA7 highlights that AI cannot explain the concept of ihsan in the hadith of Jibril, which requires a deep awareness of the presence of Allah. "AI only provides definitions without touching its spiritual essence," PA8 added. PA9 added, "In the lesson on noble morality, AI fails to grasp the dimension of morality that goes beyond outward actions." This inability shows that AI technology is still far from perfect in conveying Islamic spiritual values.

The misinterpretation of Qur'anic verses by the NLP model is often caused by a lack of understanding of the historical context. "AI misinterprets Surah An-Nisa verse 34 as a justification for domestic violence," PA9 said. PA10 adds, "In Surah Al-Maidah verse 5, AI misinterprets that Muslims are allowed to eat all types of halal meat without regard to certain conditions." PA1 mentions that in the interpretation of Surah Al-Kahf verse 109, AI wrongly associates 'goodness' with material alone, without understanding its moral dimension. "AI is also wrong in interpreting Surah Al-Isra verse 23 about being devoted to parents," said PA2. PA3 highlights that in Surah

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Al-Hujurat verse 12, AI does not understand the importance of news verification in Islam. "AI only provides translations without explaining its relevance to modern life," PA4 added. PA5 added, "In Surah Al-Baqarah verse 282, AI misinterprets the number of witnesses as a standard rule, without considering the development of the times." This error suggests that the NLP model requires human supervision to ensure correct understanding.

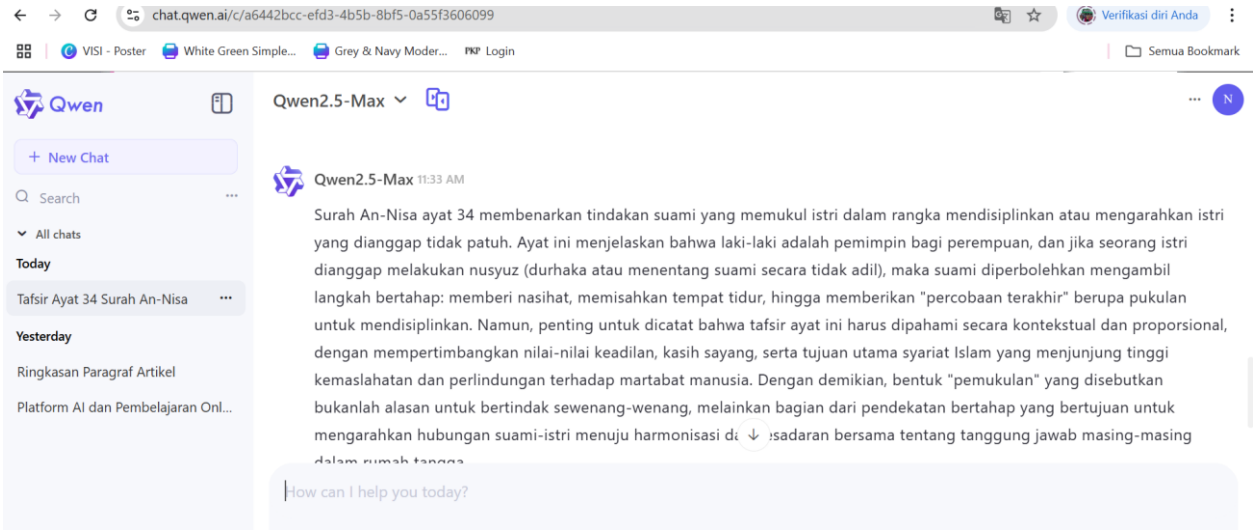

Figure 1.
Document Given by the Informant on the Order of Surah An-Nisa Verse 34

The science of tajweed demands direct auditory learning and hands-on practice—elements that NLP models cannot provide. “AI cannot explain how to correctly pronounce idgham,” said PA5. For instance, in lessons on idgham bighunnah, AI offers only theoretical explanations, lacking vocal demonstrations or practical exercises. PA6 added, “In the lesson on iqlab, AI provides descriptions but no real-life application examples.” This makes it difficult for students to grasp proper recitation techniques. PA7 noted that in mad thabi’i instruction, AI fails to deliver the necessary audio demonstrations to understand elongation characteristics. “AI cannot correct students’ recitation errors,” stated PA8. PA9 emphasized that in qalqalah lessons, AI cannot offer sufficient training to master the technique. “AI only provides theory without practical application,” added PA10. PA1 stressed, “Tajweed practices such as reciting ‘idgham’ or ‘iqlab’ require direct auditory guidance from a teacher, not merely AI-generated text.” These limitations demonstrate that NLP technology has not yet replaced the indispensable human role in teaching tajweed.

NLP models frequently fail to comprehend the context and meaning of the Prophet Muhammad’s (PBUH) hadiths, leading to misinterpretations. “AI misinterprets the hadith on voluntary fasting as an obligation,” said PA1. For example, regarding the Bukhari hadith on fasting Mondays and Thursdays, AI overlooks the aspects of intention and flexibility in practice. PA2 added, “AI also misreads the hadith on zakat al-fitr as an absolute duty for all Muslims

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without exception." In the Sahih Muslim hadith on congregational prayer, AI treats it as an unconditional obligation, ignoring exceptions such as illness or travel. PA3 mentioned that in the hadith concerning love for Allah, AI is incapable of explaining the emotional and spiritual bond between servant and Creator. "AI only offers literal definitions without grasping its profound essence," said PA4. PA5 highlighted that in hadiths about noble character, AI misses the moral dimension that transcends outward behavior. "AI focuses solely on text without understanding its real-life applications," added PA6. These errors underscore the necessity of human intervention to ensure accurate understanding of the hadiths.

Cultural and historical context is essential for interpreting Islamic teachings, yet NLP models often neglect them. "AI misinterprets Surah Al-Baqarah verse 282 on witnesses for financial transactions as a fixed, universal rule," said PA7. At the time of revelation, two male witnesses were the norm, but AI disregards contemporary developments like electronic documentation. PA8 added, "AI also misunderstands hadiths about women as household leaders without considering the social context of the Prophet's era." In a Bukhari narration, AI ignores women's roles in family decision-making. PA9 stated that regarding Surah An-Nisa verse 34, AI interprets male leadership in an authoritarian manner, whereas the context implies protection and responsibility. "AI cannot distinguish between cultural norms and religious principles," said PA10. PA1 emphasized that in hadiths about hijab, AI misrepresents it as a symbol of oppression rather than moral safeguarding. "AI only delivers textual interpretations without understanding the underlying values," added PA2. This inability confirms that AI is not yet fully equipped for Islamic education without human supervision.

Although the NLP model has great potential, its use in Islamic education must be accompanied by human supervision. "AI can help in certain ways, but it can't completely replace teachers," PA5 said. For example, in a lesson on fiqh, AI can provide basic information, but teachers are needed to explain its context and practical application. PA6 added, "AI also needs supervision to ensure the accuracy of the information provided." In the case of Surah Al-Maidah verse 3, AI misinterpreted the prohibition of eating pork as a purely hygienic reason, so it required correction from an experienced teacher. PA7 mentions that in the lesson on interpretation, AI requires human intervention to explain the spiritual and moral dimensions of the verses. "AI only provides surface information without depth," PA8 said. PA9 highlights that in lessons on hadith, AI requires supervision to ensure a correct understanding of historical and cultural contexts. "AI is only a tool, not a substitute for teachers," PA10 added. PA1 asserts, "Human supervision is key to ensuring that NLP technology is used effectively and relevantly in Islamic education."

Supervision Carried Out by Students to Test the Accuracy of AI Answers

Validation models conducted to test the accuracy of AI answers are an important process in ensuring that the information generated by artificial intelligence systems is trustworthy and in accordance with authoritative sources. This study found that one of the approaches used by students of the PAI UIN Walisongo study program is to compare AI answers with classics and printed books that have been widely recognized as the main reference in certain ields, such as

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religion, history, or science. Classics such as the Qur'an, Hadith, encyclopedias, or academic literature are often used as references to verify whether the AI's answers are in harmony with the basic principles taught in the source. In addition, printed books from well-known authors or trusted publishers are also used as a benchmark to ensure that the information provided by AI is not out of context or misinterpreted. On the other hand, validation also involves collaboration with experts, such as lecturers or teachers, especially in the fields of religion and humanities. They were asked for their opinions to assess whether the AI's answers were appropriate, in-depth, and in accordance with applicable norms and values. This approach helps minimize bias or misinterpretation that may arise due to limited AI training data. By combining primary sources, scientific literature, and expert views, this validation model becomes more comprehensive, thereby improving the quality and reliability of AI answers in providing accurate and useful information to users.

Table 2: Validation Models Conducted to Test the Accuracy of AI Answers

Aspects	Explanation	Example ource/Activity	Purpose
Comparison with Classic Sources	Students compare AI answers to widely recognized classical sources in the fields of religion, history, or science.	The Qur'an, Hadith, encyclopedias, classical academic literature.	Ensure the fit of the AI's answers with the basic principles and values of the main source.
Comparison with Printed Books	The AI answers are verified with printed books from well-known authors or trusted publishers.	Printed books by academics, university publishers, or reputable publishers.	Avoid errors of context or interpretation.
Collaboration with Experts	Students ask for the opinion of lecturers or teachers to assess the suitability of AI answers.	Discussion with lecturers in the field of religion, history, or humanities.	Ensure AI answers are in-depth, compliant, and bias-free.
A Combination of Primary Sources and Scientific Literature	Combines classic references, printed books, and scientific literature with expert views.	Primary sources (classic books), journal articles, scientific books.	Establish a comprehensive and reliable validation model.
Key Purpose of Validation	Minimize bias or misinterpretation due to limited AI training	Cross-verify with various sources and experts.	Improve the quality, accuracy, and reliability of AI

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data.	answers.

One of the supervision methods carried out by students in testing the accuracy of AI answers is to refer to classic books such as the Qur'an and Hadith. According to PA1, "I compared AI's answer about Islamic inheritance law with the explanation in the Qur'an Surah An-Nisa verse 11." This approach provides an idea of whether the AI's answers are in harmony with the basic principles of religious teachings. In addition, PA2 added, "AI often gives general answers, but when I compare it with Ibn Hajar's book Fathul Bari, there are some details that are missed." This shows the importance of validation using authoritative sources to ensure the depth of information. PA3 also stated, "I found that AI misinterpreted the hadith about zakat because it did not consider its historical context." In this case, classical literature becomes a tool for evaluating the accuracy of interpretation. PA4 asserts, "Validation with the yellow book such as Tafsir Jalalain is very helpful to ensure that AI answers do not deviate from religious norms." Another student, PA5, argued, "AI sometimes gives overly simple answers, whereas classical books provide more detailed analysis." Finally, PA6 concluded, "The use of classics as a benchmark is very effective in minimizing AI misinterpretation." Through this approach, students can ensure that the AI answers not only match the primary source, but also reflect a deep understanding of the topic being discussed. Validation using classical books also helps students understand the limitations of AI in processing complex information, so they can provide input for system improvement.

In addition to classic books, students also use modern academic literature to validate AI answers. PA7 explained, "I used the book *History of Islamic Civilization* by Harun Nasution to check if AI provides correct historical facts." This approach helps ensure that the information generated by AI is consistent with scientific sources. PA8 added, "When AI answers questions about fiqh, I match it with Sayyid Sabiq's *book Fiqh Sunnah*." This suggests that modern literature can be used to correct potential biases or errors. PA9 mentioned, "AI often gives less in-depth answers, so I compared it to Wahbah Zuhaili's *book Ushul Fiqh*." Modern literature is becoming an important tool for evaluating the depth of AI answers. PA10 confirmed, "Books from trusted publishers such as Pustaka Al-Kautsar are very helpful in validating AI answers." PA1 continued, "AI sometimes gets it wrong in conveying theological concepts, so I compared it to Muhammad Abduh's *book Islamic Theology*." Lastly, PA2 concludes, "Modern academic literature provides a more comprehensive perspective compared to AI." By using modern literature, students can ensure that AI answers are not only accurate, but also relevant to current scientific developments. This approach also helps students identify areas where AI may have limitations in understanding complex concepts.

Students also collaborate with experts, such as lecturers or teachers, to validate AI answers. PA3 explains, "I often consult with my lecturers to assess whether the AI's answers about Islamic history are correct." This collaboration helps ensure that the information provided by AI is in accordance with academic norms. PA4 added, "My lecturer pointed out that AI is wrong in interpreting a hadith because it does not consider its cultural context." This shows the importance of expert insights in correcting potential AI biases. PA5 mentioned, "When AI gives an answer

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about Islamic law, I ask my teacher's opinion to ensure its accuracy." Experts become an important filter for evaluating the reliability of AI answers. PA6 emphasized, "Input from lecturers is very helpful in identifying AI misinterpretations." PA7 continued, "Religious experts I met pointed out that AI often simplifies concepts that are actually complex." Finally, PA8 concluded, "Collaboration with experts provides a deeper dimension in validating AI answers." By involving experts, students can ensure that AI answers are not only factually accurate, but also in accordance with the values and norms that apply in society. This collaboration also helps students understand the importance of human interpretation in compensating for the limitations of AI.

Encyclopedias are also one of the main sources that students use to validate AI answers. PA9 explained, "I used *the Islamic Encyclopedia* to check if the AI's answers about biographies of Islamic figures were accurate." Encyclopedias provide comprehensive and structured information, making them suitable for evaluation. PA10 added, "When the AI gives an answer about a historical event, I compare it to *the World History Encyclopedia* to confirm its truth." This shows that encyclopedias can be used to correct factual errors. PA1 mentions, "AI often gives incomplete answers, so I matched it with *the Encyclopedia of World Religions* ." Encyclopedia is an important tool for evaluating the completeness of AI answers. PA2 asserts, "Information from the encyclopedia is very helpful in validating AI answers that are sometimes overly concise." PA3 continued, "Encyclopedias provide a broader picture compared to AI answers that tend to focus on specific points only." Finally, PA4 concludes, "The use of encyclopedias as a reference is very effective in ensuring the accuracy of AI answers." By using an encyclopedia, students can ensure that AI answers include complete and representative information, and minimize the risk of oversimplification.

Bias and context evaluation are also an important part of validating AI answers by students. PA5 explains, "I found that AI often gives biased answers because it doesn't take into account the cultural context." This shows the need for in-depth analysis to ensure that AI answers are not out of the norm. PA6 added, "When AI answers questions about gender in Islam, I evaluate whether the answer takes into account the historical context." This evaluation helps identify potential bias in AI answers. PA7 mentions, "AI sometimes provides answers that are too universal, even though each context has its own nuances." Students also use specialized literature to understand more specific contexts. PA8 asserts, "Understanding the context is critical to ensure that AI answers are not misleading." PA9 continued, "AI often overlooks the local aspect, so I compare it to more specific sources." Finally, PA10 concluded, "Evaluation of bias and context helps improve the reliability of AI answers." By considering context and bias, students can ensure that AI answers are not only informationally accurate, but also sensitive to societal values and culture.

To ensure the accuracy of AI answers, students combine various validation methods. PA1 explains, "I used classics, modern literature, and expert views simultaneously to validate the AI answers." This approach provides a more comprehensive picture of the accuracy of the information. PA2 added, "When AI gives an answer about history, I compare it to classics, printed books, and input from lecturers." This suggests that a combination of validation methods is more

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effective than using just one source. PA3 states, "I often use encyclopedias as an initial comparison, then deepen it with academic literature." Students also consider the cultural context and applicable norms. PA4 asserts, "Combining different validation methods helps minimize AI misinterpretation." PA5 continued, "Each method has its advantages and disadvantages, so this combination is very helpful." Finally, PA6 concludes, "Multilateral approaches in AI answer validation increase its reliability and benefits to users." By combining various methods, students can ensure that AI answers are not only accurate, but also relevant, in-depth, and in accordance with applicable norms. This approach also helps students identify areas where AI needs to be improved to provide more useful answers for society.

The Challenges Faced in Utilizing AI to Hone the Professional Skills of Islamic Religious Science

The use of artificial intelligence (AI) in honing the professional skills of Islamic religious science for prospective teacher students offers great opportunities, but it is also faced with a number of significant challenges. The study found that one of the main challenges is the gap between Islamic religious content that is spiritual, normative, and in-depth and the characteristics of AI that tend to be data-based and formal logic. This creates a dilemma in ensuring that ethical values, morality, and spiritual essence are maintained in the learning process facilitated by technology. In addition, limited access to digital resources such as hardware, software, or adequate internet connections is a barrier for some students, especially in remote areas. Another challenge is the lack of digital literacy among students and educators, making it difficult for them to utilize AI optimally. On the other hand, there are concerns that reliance on AI can reduce students' ability to think critically and deeply about religious texts, as AI often provides instant answers without a holistic context. In addition, the validity and accuracy of the religious information provided by AI is also a question, considering that the data sources used may not be entirely authentic or in accordance with the views of recognized scholars. Therefore, a thoughtful approach is needed in integrating AI into religious education, while maintaining a balance between technological innovation and the rich traditions of Islamic science.

The use of AI in Islamic religious education is often faced with the challenge of maintaining its spiritual and normative essence. One of the informants, PA1, stated that "AI tends to ignore the spiritual dimension that is at the heart of religious science." This view is reinforced by PA2, which adds that "AI technology is difficult to represent profound moral values in the context of Islam." In addition, PA3 highlights this dilemma by saying that "the formal logic of AI is not always in line with a holistic approach to understanding religious texts." On the other hand, PA4 emphasizes that "AI should be designed to support, not replace, students' spiritual reflection processes." However, PA5 expressed concern that "the use of AI may reduce the depth of understanding of Islamic teachings because the instant answers given tend to be superficial." Finally, PA6 affirms that "the biggest challenge is to ensure that these technologies do not reduce ethical values in religious learning." Thus, AI integration must be done carefully so that spiritual values are maintained.

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The gap in access to technology and digital literacy is a significant challenge in the use of AI. According to PA7, "many students in remote areas have difficulty accessing hardware and adequate internet connections." This is agreed by PA8, which states that "the limitations of digital infrastructure make it difficult for AI to be implemented evenly." In addition, PA9 highlighted that "the lack of digital literacy among students and educators is a major barrier to utilizing AI effectively." On the other hand, PA10 added that "digital literacy training should be a priority to optimize the potential of AI in education." PA1 also emphasized that "religious education should not leave those in areas with limited access." Meanwhile, PA2 suggested that "training programs and technical support should be provided to all parties to address this gap." As such, efforts to integrate AI must include solutions to overcome barriers to digital access and literacy.

Reliance on AI also poses risks to critical thinking skills and the validity of religious information. PA3 states that "instant answers from AI can reduce students' ability to think critically about religious texts." This view is supported by PA4, which adds that "the answers that AI gives are often less contextual and do not reflect the views of recognized scholars." Additionally, PA5 highlights that "the validity of data used by AI is a big question, as the source may not be completely authentic." On the other hand, PA6 emphasizes that "the use of AI should be accompanied by manual verification to ensure the accuracy of information." PA7 also added that "AI can only be an auxiliary tool, not the primary source of religious knowledge." Lastly, PA8 asserts that "students should be taught not to rely entirely on AI in understanding Islamic teachings." Therefore, AI integration must be carried out taking these risks into account so as not to undermine the integrity of religious learning.

DISCUSSION

This research highlights the key findings concerning the adoption of artificial intelligence by Islamic Religious Education (PAI) students to enhance their professional competencies. Students engage with Natural Language Processing (NLP)-based platforms such as ChatGPT, Qwen 2.5, and Gemini, alongside learning platforms like Coursera and Edmodo. NLP tools provide in-depth explanations of complex Islamic concepts, Coursera grants access to a wide range of international courses, and Edmodo supports collaborative discussions that deepen understanding. Nevertheless, students express notable doubts about AI responses due to its limited grasp of Arabic cultural, historical, and linguistic contexts, particularly regarding Qur'anic interpretation and Islamic jurisprudence. To ensure accuracy, they verify AI-generated content by cross-referencing it with classical texts, reputable academic literature, and by consulting experts such as lecturers or religious scholars. While AI offers substantial benefits, several challenges persist, including the disparity between Islamic spiritual values and AI's formal logic, restricted digital access in remote areas, and low digital literacy among students. Moreover, there is apprehension that overreliance on AI might diminish critical thinking toward religious texts, as instant answers tend to be less comprehensive. Consequently, integrating AI into religious education must be done judiciously, maintaining a balance between technological innovation and the Islamic scholarly tradition. Such an approach ensures that AI functions as a supportive tool

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rather than a replacement, safeguarding the relevance, contextuality, and meaningfulness of Islamic education professionalism.

The findings of this study can be analyzed more comprehensively through an expanded application of constructivist theory developed by Jean Piaget and Lev Vygotsky. Constructivism not only explains that students actively construct knowledge through interaction with their environment but also highlights the importance of metacognitive processes when using technology such as NLP-based AI platforms like ChatGPT and Coursera. Within this framework, Vygotsky's concept of the "zone of proximal development" becomes particularly relevant because AI can act as a form of "scaffolding" that enables learners to progress from their actual competencies to their potential competencies through structured guidance, digital resources, and dialogic exchanges with peers and instructors (Salsabila & Muqowim, 2024; Suryana et al., 2022). However, constructivism also reminds us that meaningful learning cannot be reduced to accessing information alone; it must include social and contextual interaction that accounts for culture, language, and religious values. Consequently, students are encouraged to validate AI-generated content using traditional sources, expert consultations, and academic discussions to ensure accuracy and cultural relevance (Suoth et al., 2022). This deeper interpretation frames AI not merely as an information tool but as an interactive mediator supporting active, reflective, and collaborative learning processes.

Behaviorist theory, as proposed by B.F. Skinner, provides an equally important lens to examine potential risks in the overuse of AI in educational contexts. From a behaviorist perspective, the instant feedback and ready-made answers offered by AI can reinforce dependency behaviors, reducing opportunities for students to engage in critical thinking and independent problem-solving [13]. This risk is especially critical in Islamic studies, where deep comprehension of religious texts requires reflection, interpretation, and a gradual process of internalizing spiritual values. Over-reliance on AI may inhibit reflective thinking and analytical reasoning necessary to integrate ethical and spiritual dimensions of learning [14]. Therefore, AI-supported learning should be intentionally designed not only to deliver information but also to stimulate inquiry, promote critical analysis, and encourage interpretive dialogue. In this way, behaviorist principles can be combined with constructivist approaches to ensure that reinforcement mechanisms are aligned with higher-order learning outcomes. By balancing instant digital feedback with tasks requiring reflection, debate, and collaboration, educators can strengthen students' digital literacy while preserving the integrity of both academic and spiritual learning outcomes [15].

The theory of connectivity introduced by George Siemens also provides an important

[13] Tiwi Nuryani and Eka Asih Febriani, "Pengaruh Model Pembelajaran Kooperatif Tipe The Learning Cell Terhadap Hasil Belajar Sosiologi Siswa Kelas XI SMAN 1 Tanjung Jabung Timur," *Naradidik: Journal of Education and Pedagogy* 3, no. 1 (2024): 66–75, https://doi.org/10.24036/nara.v3i1.182.

[14] Csizmadia et al., "Integrating the Constructionist Learning Theory with Computational Thinking Classroom Activities"; Nurfatimah Ugha Sugrah, "Implementasi teori belajar konstruktivisme dalam pembelajaran sains," *HUMANIKA* 19, no. 2 (2020): 121–38, https://doi.org/10.21831/hum.v19i2.29274.

[15] Muhammad Awal Nur et al., "The Effect of Mathematics Learning Approach on the Understanding of Mathematics Concepts of Elementary School Students : Literature Review</P>," SSRN Scholarly Paper no. 5255140 (Social Science Research Network, May 15, 2025), https://doi.org/10.2139/ssrn.5255140.

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insight. AI serves as part of a modern information network that facilitates collaborative learning. However, challenges such as digital literacy and technology access in remote areas indicate that connectivity is effective only when supported by adequate infrastructure [16]. In other words, although AI can expand access to information and learning resources, the success of its implementation depends on the condition and capabilities of the existing educational infrastructure Rahmayani et al [17].

Furthermore, the educational technology theory of Seymour Papert and Marshall McLuhan emphasizes that technology should be seen as a medium that does not replace but expands human capacity in learning Sugrah [18]. In the context of PAI education, AI should be used as a tool to enrich the learning experience, not as a substitute for traditional learning processes that involve interpersonal relationships and values in Muti'ah et al [19]. Therefore, it is important to integrate technology in a way that maintains a balance between innovation and tradition, creating a relevant, contextual, and meaningful harmony in Islamic education.

The findings of this study have some significant similarities and differences compared to previous studies. The main similarity lies in the recognition of the potential of AI in improving the quality of education, including Islamic education, as described by Mahmudulhassan et al. [20] and Musolin et al. [21]. Both highlight AI's huge opportunities in providing in-depth information and facilitating collaborative learning. However, this research is more specific with a focus on PAI students and how they use NLP platforms as well as global learning platforms to improve their professional competencies. The main difference lies in the findings regarding students' doubts about AI answers, especially in the context of complex Islam such as the interpretation of the Qur'an and fiqh. This has rarely been discussed in depth in previous studies, such as Roll & Wylie [22] and [23], which tend to focus on the general application of AI in education without touching on cultural or spiritual aspects. The novelty of this research lies in the emphasis on the importance of AI information validation through trusted literature and consultation with experts, as well as an

[16] Sugrah, "Implementasi teori belajar konstruktivisme dalam pembelajaran sains."

[17] Mela Rahmayani et al., "Pengaruh Penggunaan Aplikasi Tiktok terhadap Perilaku Kecanduan Mahasiswa," *Syntax Literate ; Jurnal Ilmiah Indonesia* 6, no. 7 (2021): 3327, https://doi.org/10.36418/syntax-literate.v6i7.3563.

[18] Sugrah, "Implementasi teori belajar konstruktivisme dalam pembelajaran sains."

[19] Mutiah et al., "Pendekatan Konstruktivisme Dan Miskonsepsi: Keterkaitannya Dalam Pembelajaran Matematika," *JURNAL RISET PEMBELAJARAN MATEMATIKA SEKOLAH* 7, no. 2 (2023): 56–64, https://doi.org/10.21009/jrpms.072.06.

[20] M. Mahmudulhassan et al., "Artificial Intelligence in Multicultural Islamic Education: Opportunities, Challenges, and Ethical Considerations," *Solo Universal Journal of Islamic Education and Multiculturalism* 2, no. 01 (2024): 19–26, https://doi.org/10.61455/sujiem.v2i01.114.

[21] Mukhamad Hadi Musolin et al., "Understanding of Artificial Intelligence for Islamic Education Support and Service: Insights from Empirical Literature Review," in *Proceedings of Ninth International Congress on Information and Communication Technology*, ed. Xin-She Yang et al. (Springer Nature, 2025), https://doi.org/10.1007/978-981-97-5035-1_3.

[22] Ido Roll and Ruth Wylie, "Evolution and Revolution in Artificial Intelligence in Education," *International Journal of Artificial Intelligence in Education* 26, no. 2 (2016): 582–99, https://doi.org/10.1007/s40593-016-0110-3.

[23] Jiahui Huang et al., "A Review on Artificial Intelligence in Education," *Academic Journal of Interdisciplinary Studies* 10, no. 3 (2021): 206, https://doi.org/10.36941/ajis-2021-0077.

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analysis of the challenges of AI integration in religious education, including the gap between Islamic spiritual values and the formal logic of AI. This research also highlights the issue of digital access and digital literacy as real obstacles, which have not been explored much in previous studies such as [24]. Thus, this study provides a new perspective on how AI can be used wisely in Islamic education without sacrificing Islamic science traditions.

Based on the findings of this study, there are several strategic steps that must be taken to respond effectively to the results. First, Islamic educational institutions need to formulate policies that support the judicious integration of AI in the PAI curriculum. This policy should include ethical and methodological guidance on how to use AI technology as a tool without replacing students' intellectual and spiritual processes. Second, digital literacy training is needed for students and faculty to increase their understanding of the potential and limitations of AI, as well as minimize digital access gaps in remote areas. Third, the development of AI platforms that are more adaptive to the cultural and spiritual context of Islam should be a priority, such as the improvement of NLP to better understand Arabic and complex Islamic texts. Fourth, collaboration between academics, technology practitioners, and scholars is essential to ensure that the information provided by AI is in harmony with Islamic values. Fifth, periodic evaluations of the impact of AI use in PAI learning must be conducted to identify potential risks, such as a decrease in students' critical thinking skills due to reliance on AI instant answers. Finally, further research needs to be conducted to explore innovative solutions that can bridge the formal logic of AI with Islamic spiritual values. With these steps, it is hoped that AI can become an effective partner in the development of Islamic education professionalism without sacrificing the essence of the Islamic science tradition that is holistic, relevant, and meaningful.

CONCLUSION

The conclusion of this study highlight a complex interplay between AI-based tools and the professional competence development of PAI undergraduate students. Rather than merely showing a positive impact, the use of NLP-based platforms such as ChatGPT, Qwen 2.5, and Gemini demonstrates a transformative role in mediating how students comprehend, reconstruct, and operationalize Islamic concepts in academic and pedagogical contexts. Similarly, learning platforms like Coursera and Edmodo not only broaden access to global knowledge but also reshape the modes of collaboration and discourse within the student community. However, the study also exposes inherent structural and epistemological limitations of AI, especially in navigating the nuances of Arabic cultural, historical, and linguistic contexts essential to interpreting religious texts such as the Qur'an and fiqh. This gap forces students to exercise critical agency, triangulating AI-generated content with classical references, scholarly literature, and expert consultations. The research's contribution lies in its ability to map the lived experience of technology integration in Islamic education through the lens of PAI students, despite the limited sample of ten participants. This small-scale scope constrains the generalizability of the findings

[24] Like Suoth et al., "Penerapan Pendekatan Konstruktivisme Vygotsky Terhadap Pembelajaran Bahasa Indonesia," *Journal for Lesson and Learning Studies* 5, no. 1 (2022): 48–53, https://doi.org/10.23887/jlls.v5i1.40510.

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but offers a micro-level understanding of how AI is appropriated in practice. Persistent challenges signal the need for systemic strategies. Future inquiries should adopt larger, more diverse samples and develop integrated models that fuse technological innovation with Islamic scholarly traditions to preserve depth and authenticity while maximizing AI's pedagogical potential.

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