

**PERCEPTIONS AND IMPACTS OF THE USE OF
ARTIFICIAL INTELLIGENCE (AI) IN DEEP LEARNING
AMONG PAI STUDENTS**

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Abstract:

Advances in Artificial Intelligence (AI) have brought significant changes to the world of education, including the Islamic Religious Education (PAI) program. The use of AI has the potential to support deep learning through easier access to information, personalized learning, and increased learning efficiency. However, research on the use of AI in the context of deep learning for PAI students remains limited. This study aims to analyze the perceptions and impacts of AI utilization in supporting deep learning among PAI students. The study employs a qualitative approach using the case study method. The research participants consisted of 20 active students in the PAI program who had used AI in their academic activities and were selected through purposive sampling. Data were collected through semi-structured interviews and analyzed using the interactive model proposed by Miles, Huberman, and Saldaña, which includes data reduction, data presentation, and drawing conclusions. Data validity was ensured through source triangulation and member checking. The results show that all respondents have used AI in their learning. Most students believe that AI helps them understand course material, speeds up the completion of assignments, facilitates the search for references, improves the efficiency of study time, and supports their motivation to learn. Additionally, AI helps students obtain explanations that are more concise and easier to understand. However, the use of AI also faces several challenges, such as limited internet connectivity, the need to verify the accuracy of information, restricted access to certain features, and the potential for overreliance on technology. This study concludes that AI has a positive impact on supporting in-depth learning among PAI students; however, its use must be approached wisely and critically, while maintaining academic ethics and recognizing the role of instructors as primary mentors in the learning process.

Keywords: *Artificial Intelligence; Deep Learning; Islamic Education Students; Student Perceptions*

Introduction

The rapid development of digital technology has brought significant changes to the world of education, including learning at religious universities such as the Islamic Religious Education (PAI) Study Program. Students are expected not only to understand the material theoretically but also to be able to utilize technology as part of the learning process. However, in reality, many PAI students still struggle to gain a deep understanding of the material due to the limitations of learning methods that remain conventional and fail to adapt to individual needs. This results in low learning effectiveness and suboptimal student learning outcomes. This issue can be explained through constructivist learning theory, which emphasizes that effective learning occurs when students actively construct their knowledge through experience and relevant technological support.

Several previous studies have examined the use of Artificial Intelligence (AI) for deep learning in education. Research by ¹ shows that AI plays a crucial role in transforming educational systems through personalized learning, automated assessment, and the development of intelligent tutoring systems capable of enhancing students' learning effectiveness. Furthermore, research by ² revealed that the integration of AI in education can support adaptive learning and improve the quality of interactions between the system and learners through the analysis of learning data.

Research by ³ indicates that the majority of higher education students have a positive perception of the use of AI chatbots such as ChatGPT, Gemini, and Copilot because they help obtain information quickly, support conceptual understanding, and improve learning efficiency. However, students also expressed concerns regarding the accuracy of information and the potential for dependence on technology. Research by ⁴ also indicates that more than half of students have a positive perception of using AI chatbots in learning because they help obtain information quickly, improve learning efficiency, and support the completion of academic assignments. Nevertheless, students also expressed concerns regarding the accuracy of information and the impact of AI use on the learning process in the future.

Another study by ⁵ states that AI methods, including deep learning, can be applied at various stages of education from planning to learning assessment such as predicting student performance and implementing intelligent learning systems. Furthermore, ⁶ found that the application of artificial intelligence in deep learning can

¹ Kamalov et al. "New Era of Artificial Intelligence in Education: Towards A Sustainable Multifaceted Revolution," 2023, 1–36.

² Bozkurt et al. "Artificial Intelligence and Reflections from Educational Landscape : A Review of AI Studies in Half a Century." *Sustainability*, 2021, 1–16.

³ Schei et al. "Perceptions and Use of AI Chatbots among Students in Higher Education : A Scoping Review of Empirical Studies." *Education Sciences*, 2024.

⁴ Stohr et al. "Perceptions and Usage of AI Chatbots among Students in Higher Education across Genders, Academic Levels and Fields of Study." *ScienceDirect* 7 (2024). <https://doi.org/https://doi.org/10.1016/j.caeai.2024.100259>.

⁵ Mallik & Gangopadhyay "PROACTIVE AND REACTIVE ENGAGEMENT OF ARTIFICIAL INTELLIGENCE METHODS FOR EDUCATION: A REVIEW," 2026.

⁶ Nguyen et al. "Artificial Intelligent Based Teaching and Learning Approaches: A Comprehensive Review." *International Journal of Evaluation and Research in Education (IJERE)* 12, no. 4

improve the quality of learning through the personalization of materials, the automation of academic tasks, and increased student engagement in the learning process.

Another study by ⁷ demonstrates that deep learning models utilizing AI are highly effective for analyzing and predicting student academic performance, thereby assisting institutions in improving the quality of learning and making data-driven decisions. ⁸ also found that the use of ChatGPT acts as a mediating variable that strengthens the relationship between critical thinking skills, interest in learning, and students' academic achievement. These findings indicate that the use of AI not only facilitates access to information but also contributes to a more in-depth learning process and improved academic achievement among students.

Research by ⁹ shows that integrating AI into lectures can increase student engagement, expand access to learning resources, and help students receive feedback more quickly. Nevertheless, the researchers emphasize the importance of guidelines for AI use to ensure that the benefits obtained are optimized. In line with this perspective, ¹⁰ also noted that students have a positive perception of using ChatGPT in learning because it helps develop problem-solving skills, critical thinking, and information-seeking abilities. However, students also highlighted the importance of verifying information provided by AI to maintain the quality of the learning process.

However, these studies still focus on the general context of education and have not specifically examined the use of AI in deep learning for Islamic Education students. In fact, the integration of deep learning in the context of religious education has distinct characteristics, necessitating a specialized approach as a novel contribution in this study. Therefore, this study aims to investigate the impact of utilizing an Artificial Intelligence system to support deep learning for PAI students.

This study aims to analyze the impact of utilizing an Artificial Intelligence system in deep learning to enhance the effectiveness of learning for PAI students. The selection of the PAI Study Program as the research location is based on the urgent need to integrate modern technology into religious education which has long been dominated by conventional methods as well as the fact that the subject of this study possesses unique characteristics in combining religious and technological (AI) aspects.

(2023). <https://doi.org/10.11591/ijere.v12i4.26623>.

⁷ Gupta & Mishra "Artificial Intelligence and Deep Learning- Based Information Retrieval Framework for Assessing Student Performance." *International Journal of Information Retrieval Research* 12, no. 1 (2022): 1–27. <https://doi.org/10.4018/IJIRR.2022010101>.

⁸ Indriyani & Harsono "Critical Thinking and Learning Interest in Academic Achievement : The Mediating Role of ChatGPT." *Edunesia : Jurnal Ilmiah Pendidikan* 7, no. 1 (2026): 128–44.

⁹ Song et al. "Integrating AI in College Education : Positive yet Mixed Experiences with ChatGPT." *ArXiv*, 2024, 1–6.

¹⁰ Palayukan et al. "Investigasi Persepsi Mahasiswa Terhadap ChatGPT Dalam Model Blended Learning Pada Pembelajaran Matematika." *Journal of Vocational, Informatics and Computer Education* 2, no. 1 (2024): 14–26.

Method

This study employs a qualitative approach using the case study method to gain an in-depth understanding of the perceptions and impacts of using Artificial Intelligence (AI) in deep learning among students in the Islamic Religious Education (PAI) program. The study began with a preparatory phase that included determining the research focus, developing semi-structured interview guidelines, and establishing criteria for selecting informants. Informants were selected using purposive sampling, targeting active students in the PAI program who had utilized AI tools such as ChatGPT, Gemini, Claude, or other AI applications in their academic activities. A total of 20 students were selected as informants because they were deemed capable of providing information relevant to the study's objectives.

Data collection was conducted through semi-structured interviews, which allowed the researcher to explore information in greater depth regarding the students' experiences, perceptions, benefits, and challenges related to the use of AI in the learning process. The interviews were conducted in person or online, lasting approximately 10–15 minutes per informant. During the interviews, the researcher recorded the conversations and took field notes to ensure the completeness of the data. In addition to the interviews, to ensure data validity, the researcher conducted a member check by asking several informants to review a summary of the interview results and performed source triangulation by comparing responses across informants.

Data analysis was conducted concurrently with the data collection process using the interactive analysis model proposed by Miles, Huberman, and Saldaña, which includes data reduction, data presentation, and drawing conclusions. During the data reduction stage, all recorded interview results were transcribed into text, then read and reviewed repeatedly to understand the meanings contained within them. Next, the researcher coded key statements related to the research focus, such as the benefits of AI in understanding course material, learning time efficiency, ease of accessing information, internet connectivity issues, information accuracy, and the potential for dependence on AI technology.

After the data reduction process was completed, the researcher presented the data by grouping the coding results into several main themes that emerged from the interviews. These themes included the intensity of AI use in learning, the benefits of AI for students, the positive impact on deep learning, obstacles to AI use, and students' views on the role of instructors amid the development of AI technology. The grouped data was then presented in the form of narrative descriptions supported by direct quotes from the informants to strengthen the interpretation of the research findings.

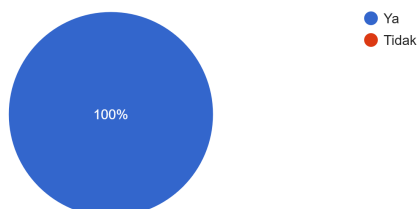
The final stage involves drawing conclusions and verification. At this stage, the researcher identifies patterns, relationships, and trends emerging from the various themes identified. The analysis results are then compared across informants to ensure data consistency and strengthen the validity of the findings. The verification process is conducted continuously throughout the study via member checks and source triangulation. Based on the results of this analysis, the researcher concluded that the use of AI has a positive impact on supporting in-depth learning among PAI students, particularly in improving learning efficiency, expanding access to information, and aiding understanding of the material, although there are still several challenges, such as

limited internet connectivity, the need to verify the accuracy of information, and the potential for dependence on AI technology.

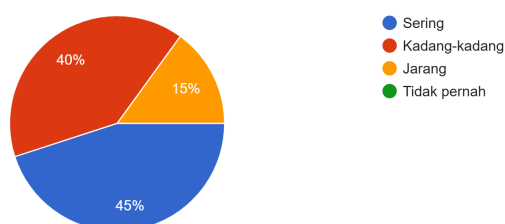
Discussion

The research results show that all respondents (100%) reported having used Artificial Intelligence (AI) in their learning process. This indicates that the use of AI has become an integral part of PAI students' learning activities. Regarding frequency of use, 45% of respondents reported using AI frequently, 40% occasionally, and 15% rarely. These findings suggest that the majority of students are quite active in utilizing AI in their academic activities. A total of 95% of respondents stated that AI helps them understand PAI course material, while the remaining 5% did not feel it helped them significantly.

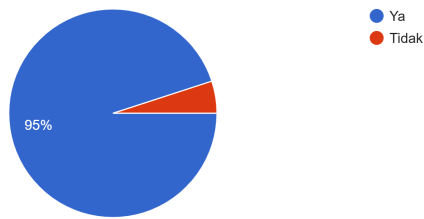
Apakah Anda pernah menggunakan Artificial Intelligence (AI) dalam pembelajaran?
20 jawaban



Seberapa sering Anda menggunakan AI dalam kegiatan belajar?
20 jawaban

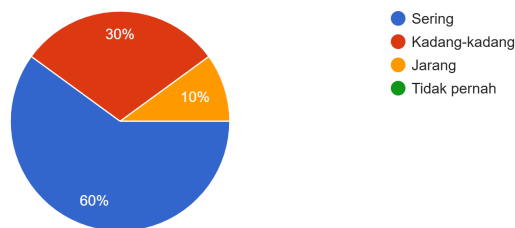


Apakah AI membantu Anda memahami materi perkuliahan ?
20 jawaban

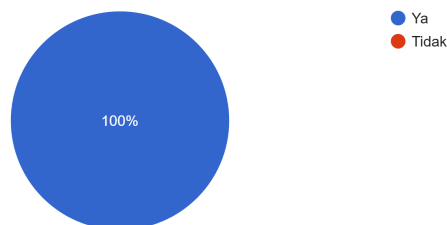


When it comes to using AI to complete tasks, 60% of respondents said they use it often, 30% said they use it sometimes, and 10% said they use it rarely. All respondents (100%) stated that AI helps speed up task completion. Additionally, when searching for study materials, 45% of respondents often use AI, 40% sometimes, and 15% rarely. A total of 80% of respondents felt that AI can increase motivation to learn, while the remaining 20% did not feel an increase in motivation.

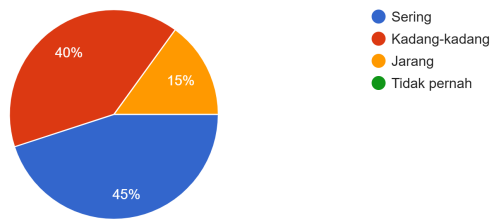
Seberapa sering Anda menggunakan AI untuk mengerjakan tugas kuliah?
20 jawaban



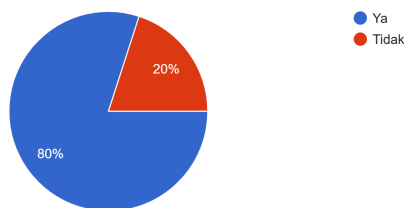
Apakah penggunaan AI membuat Anda lebih cepat menyelesaikan tugas?
20 jawaban



Seberapa sering Anda menggunakan AI untuk mencari referensi belajar?
20 jawaban

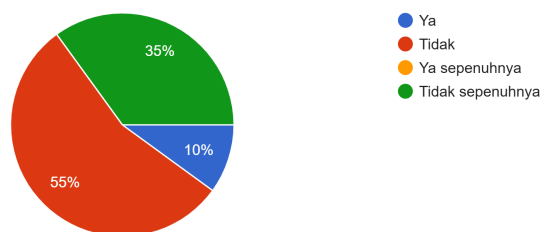


Apakah AI meningkatkan motivasi belajar Anda?
20 jawaban

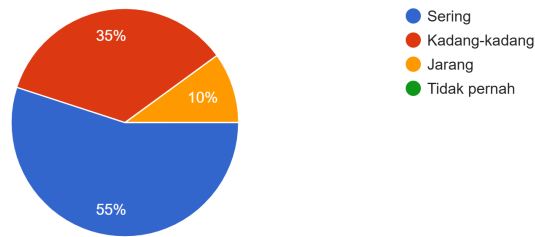


However, challenges still exist in the use of AI. Most respondents reported occasionally experiencing difficulties, although there was variation in the frequency of these difficulties. Additionally, regarding the role of AI in replacing instructors, 55% of respondents disagreed, 35% disagreed somewhat, and only 10% agreed. In terms of independent use, 55% of respondents said they often use AI on their own, 35% said they do so occasionally, and 10% said they rarely do so.

Apakah Anda merasa AI dapat menggantikan sebagian peran dosen?
20 jawaban



Seberapa sering Anda menggunakan AI secara mandiri tanpa bantuan orang lain?
20 jawaban



Based on the results of the open-ended interviews, most respondents reported positive experiences using AI. One respondent stated that *“AI makes it a little easier for me to find references,”* while another respondent noted that *“using ChatGPT helps me create scripts for educational videos.”* In addition, some respondents stated that AI helps answer questions they didn’t have time to ask in class, such as *“sometimes I ask AI after class is over so I can get an answer right away.”* Other findings indicate that AI helps students understand course material quickly, as expressed in the statement that *“AI is very helpful for understanding course material quickly and more accurately.”*

The main benefits students experience are convenience and efficiency in learning. This is evident from respondents’ statements such as *“it simplifies the learning process,”* *“AI’s answers are more concise, making them easier to understand,”* and *“AI helps accelerate understanding of the material and saves time.”* Furthermore, AI also helps in developing ideas, summarizing material, and providing simpler explanations.

On the other hand, several challenges were also identified in the use of AI. Respondents mentioned technical issues such as internet connectivity and limited access, for example, *“the challenge is the signal, and sometimes I have to upgrade to the pro version.”* Additionally, there were challenges related to the accuracy of information, such as *“AI answers can be wrong if not double-checked”* and *“the sources provided are not very reliable.”* Some respondents also expressed concerns about dependency, such as the statement, *“I’m afraid I’ll become lazy and stop thinking for myself if I use AI too often.”*

In terms of understanding the material, most respondents stated that AI has a positive impact. This is evident from statements such as *“AI is very helpful in understanding difficult material”* and *“I went from not understanding at all to understanding it pretty well.”* However, some respondents also cautioned that understanding can become superficial if one relies solely on AI, such as *“it can lead to a false sense of understanding if it’s only used to copy answers.”*

As for respondents’ expectations regarding the future use of AI, they indicated that AI is expected to continue to evolve and be used wisely. One respondent stated that *“AI must remain a tool, not a primary substitute for human thinking.”* In addition, there is a hope that AI will become more accurate and capable of providing valid references, and that it will be used with due regard for ethics and academic values. Respondents

also emphasized the importance of using AI as a learning aid, not as a substitute for the role of instructors.

The research findings indicate that the use of Artificial Intelligence (AI) to enhance deep learning has become an important part of the learning process for Islamic Education students, with a high level of utilization and positive perceptions regarding its benefits in improving understanding and learning efficiency. The main findings show that AI helps students understand difficult material, speeds up task completion, and facilitates access to learning resources. This is in line with constructivist learning theory, which emphasizes that learners actively construct their knowledge through interaction with various learning resources, including digital technology¹¹. Furthermore, these findings also support the concept of technology-enhanced learning, which states that technology can improve the quality of learning through personalization and broader access to information¹². These findings are also relevant to the Indonesian government's latest policy, as outlined in the 2026 Joint Ministerial Decree (SKB) issued by seven ministers, which affirms that the use of AI in education is intended to support adaptive, efficient, and digital technology-based learning¹³. Thus, the results of this study support theories and policies that position AI as a strategic tool in educational transformation.

However, this study also identified challenges in AI usage, such as network limitations, information accuracy that is not yet fully validated, and the potential for students to become overly reliant on technology. These findings indicate that while AI offers significant benefits, its use still requires proper oversight and strong digital literacy. This is also consistent with the principles outlined in the Joint Ministerial Decree (SKB) of 7 Ministers, which emphasizes the importance of using AI wisely, ethically, and without replacing the primary role of educators¹⁴. Thus, the results of this study are not entirely affirmative but rather provide a critical perspective on the use of AI in learning. Therefore, more in-depth follow-up research is needed, particularly to examine the pedagogical integration of AI in PAI instruction and its long-term effects on critical thinking skills, independent learning, and ethical aspects of technology use.

Conclusion

Based on the research findings, it can be concluded that the use of Artificial Intelligence (AI) in deep learning among students in the Islamic Religious Education (PAI) program is viewed positively and has a significant impact on the learning process. All respondents have used AI in their academic activities, whether to understand course material, search for references, or complete assignments. Most students stated that AI helps improve their understanding of the material, speeds up the completion of assignments, facilitates access to information, and increases the efficiency of their study

¹¹ Aoonlamai et.al "Integrating Digital Tools and Constructivist Learning: A Ubiquitous Learning Framework for Enhancing Creativity in Music Education." *BMC Psychology*, 2025.

¹² Ahmed M Hasanein and Abu Elnasr E Sobaih, "Drivers and Consequences of ChatGPT Use in Higher Education : Key Stakeholder Perspectives," *European Journal of Investigation in Health, Psychology and Education*, 2023, 2599–2614.

¹³ Ejourney, "Pedoman Baru AI Untuk Pelajar: Poin-Poin SKB 7 Menteri Dan Strategi Pendidik Menghadapi Era Digital," ejourney, 2026, <https://share.google/QkRa9bjh1HFc0M9t>.

¹⁴ Ejourney. "Pedoman Baru AI Untuk Pelajar: Poin-Poin SKB 7 Menteri Dan Strategi Pendidik Menghadapi Era Digital." ejourney, 2026. <https://share.google/QkRa9bjh1HFc0M9t>.

time.

In addition to its positive impacts, this study also identified several challenges in the use of AI, such as limited internet connectivity, the need to verify the accuracy of information, restricted access to certain features, and the potential for students to become overly reliant on technology. Nevertheless, the majority of students believe that AI cannot replace the role of instructors, as instructors continue to play a vital role as mentors, facilitators, and providers of academic values and ethics in the learning process.

Overall, the use of AI has the potential to support in-depth learning among PAI students by improving access to information, learning efficiency, and a better understanding of the material. Therefore, AI should be integrated wisely and responsibly as a learning tool that supports critical thinking and independent learning, while upholding academic and ethical values in education.

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