AR-RASYID : JURNAL PENDIDIKAN ISLAM
http://jurnal.umsu.ac.id/index.php/ARRASYID
E-ISSN : 2808-8328

The Impact of Using Artificial Intelligence in the Process of Islamic and Muhammadiyah Education

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Abstract

Artificial Intelligence (AI) has become an increasingly popular topic in education. In the context of Islamic education, the use of AI can help improve the efficiency and effectiveness of the teaching and learning process, as well as increase student engagement and personalize learning. However, the impact of using AI in Islamic education still needs to be studied systematically. Therefore, this study aims to explore the impact of using AI in Islamic education through a comprehensive systematic study of the literature. In this study, we identified and analyzed several articles related to the use of AI in Islamic education from various literature sources, including academic journals and international conferences. The results of the study indicate that the use of AI in Islamic education has a positive impact on efficiency and productivity, personalization of learning, student engagement, assessment accuracy, and accessibility. However, the use of AI also has challenges, such as concerns about student data privacy and security, and the risk of replacing teachers with technology. Therefore, the use of AI in Islamic education needs to be developed with the right strategy and good management to maximize its benefits and minimize its negative risks.

Keywords:
Artificial Intelligence; Islamic Education; Systematic Study.

Abstrak

Kecerdasan Buatan (AI) telah menjadi topik yang semakin populer dalam pendidikan. Dalam konteks pendidikan Islam, penggunaan AI dapat membantu meningkatkan efisiensi dan efektivitas proses belajar-mengajar, serta meningkatkan keterlibatan siswa dan mempersonalisasi pembelajaran. Namun, dampak penggunaan AI dalam pendidikan Islam masih perlu diteliti secara sistematis. Oleh karena itu, studi ini bertujuan untuk mengeksplorasi dampak penggunaan AI dalam pendidikan Islam melalui studi sistematik literatur yang komprehensif. Dalam studi ini, kami mengidentifikasi dan menganalisis beberapa artikel yang terkait dengan penggunaan AI dalam pendidikan Islam dari berbagai sumber literatur, termasuk jurnal akademik dan konferensi internasional. Hasil studi menunjukkan bahwa penggunaan AI dalam pendidikan Islam memiliki dampak positif pada efisiensi dan

Kata Kunci:
Kecerdasan Buatan; Pendidikan Islam; Studi Sistematik.

produktivitas, personalisasi pembelajaran, keterlibatan siswa, akurasi penilaian, dan aksesibilitas. Namun, penggunaan AI juga memiliki tantangan, seperti kekhawatiran privasi dan keamanan data siswa, serta risiko penggantian guru dengan teknologi. Oleh karena itu, penggunaan AI dalam pendidikan Islam perlu dikembangkan dengan strategi yang tepat dan pengelolaan yang baik untuk memaksimalkan manfaatnya dan meminimalkan risiko negatifnya.

Received : 18 January 2025; Revised: 17 February 2025; Accepted: 20 May 2025

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Program Studi Pendidikan Agama Islam
Universitas Muhammadiyah Sumatera Utara

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1. Introduction

Given that Islam as a religion is still growing and gaining traction globally, Islamic education is an essential field. The application of artificial intelligence (AI) has grown in popularity in Islamic education in tandem with the quick advancement of technology. AI can boost student engagement, customize learning, and increase the efficacy and efficiency of the teaching and learning process.

In addition to helping to support the development of more effective curricula and guarantee that learning can be tailored to students' needs and interests, the application of AI in Islamic education can help increase access to education, particularly for students who live in remote areas or lack sufficient access to schools.

However, there are risks and difficulties associated with using AI in Islamic education that need to be considered, including worries about the security and privacy of student data and the possibility that technology would eventually replace teachers. In order to better understand the advantages and difficulties of implementing AI in Islamic education, this study intends to carry out methodical research on the subject.

Through this research, it is expected to provide recommendations for the development of the use of AI in better Islamic education, and can provide meaningful contributions to the development of Islamic education in the increasingly advanced digital era. This study is expected to pave the way for the development and application of AI technology in Islamic education that is more effective and efficient.

2. Methods

This study uses a literature research approach, by conducting a systematic study of articles related to the use of AI in Islamic education. This approach is carried out to identify and analyze articles that are relevant to the research topic, so that it can provide a comprehensive picture of the impact of the use of AI in Islamic education. The data sources used in this study are articles related to the use of AI in Islamic education from various literature sources, including academic journals and international conferences. The data collection technique used is an

online search technique using databases such as Google Scholar, IEEE Xplore, and ACM Digital Library. The search was carried out using keywords such as "artificial intelligence", "education", "Islamic education", "personalization", "assessment", and "privacy".

The following are the selection criteria for the papers used in this study: 1) pertinent to the discussion of AI's use in Islamic education; 2) published in scholarly publications or at international conferences; 3) accessible online; 4) written in English; and 5) from 2010 to 2023. Following the search and selection of articles, a screening procedure was conducted to make sure the articles were pertinent to the research topic by reviewing their abstract and title. Following selection, all of the articles were read for additional analysis.

3. Result and Discussion

3.1. Artificial Intelligence

Artificial Intelligence (AI) is a branch of science that enables machines, such as computers, to perform tasks and functions as humans can. More specifically, AI involves efforts to develop intelligence in machines based on human-like behavior (Mulyana, 2022). The main goal of AI is to enable computers to execute commands with capabilities that can rival human capabilities. In the context of AI, there are four main approaches that can be taken (Cholissodin et al., 2020):

1) Acting humanly: AI systems are able to perform tasks or interact with the environment as humans do.
2) Thinking humanly: AI systems have the ability to think and process information as humans think.
3) Think rationally: AI systems can think logically and rationally in decision making.
4) Act rationally: AI systems are able to act and respond to situations in a rational manner, based on logic and predetermined goals.

3.2. Concept of Artificial Intelligence

Jamaludin (2021:8), explains that there are 3 core concepts of AI, including:

1) Machine Learning.
   Currently, humans have had significant interactions with AI, although many are still unaware of it. One example of such interaction is the use of Gmail which uses automatic filters to facilitate searching. In addition, the calendar and alarm features on smartphones are also forms of human interaction with AI. However, AI can only learn and operate with the help of predetermined operational codes. In AI development, machines are given trial examples to execute large numbers of tasks. Through this process, the machine learns and stores information in its memory, so that in the next trial, the machine can recognize patterns, shapes, faces, and other things better.
2) Deep Learning.
   The next core part of AI is Deep Learning, a technique that teaches machines to imitate human actions by modeling and classifying large and complex data using multi-layered neural networks. An example is a driverless car that can recognize road curves, turns, traffic signs,

pedestrians, and other elements. Deep Learning techniques are also used in voice control on mobile devices, TVs, and others. Currently, Deep Learning is a major focus in AI development because this technique makes things that were previously considered impossible possible. The accuracy of Deep Learning is also better and even exceeds human accuracy in some cases.

Deep Learning models utilize large labeled data and use multi-layered neural networks to process information in the form of images, text, and sound.

3) Artificial Neural Network.

Artificial Neural Network, or Neural Network, is a technology that aims to imitate the information process that occurs in the human biological nervous system by using the brain structure as the main key. This technology is used in various applications, such as understanding patterns or grouping data through the learning process. Artificial neural networks consist of a large number of elements called neurons, which work together to solve certain problems. The application of Artificial Neural Networks focuses on digital signal processing and pattern recognition, such as handwriting model recognition in check payments, data analysis, facial recognition, and weather prediction. By using the principles above, this technology can be used to create robots that are able to think and act independently without just following the given code.

An example of the use of Artificial Neural Networks is in image recognition. For example, a company that sells clothes can use Artificial Neural Networks to process images of clothes provided by customers and predict the right size for that customer based on data collected from other customers with similar body sizes. In this case, the Artificial Neural Network will learn patterns from the existing data and can provide accurate predictions.

Another example is in speech recognition. A virtual assistant device like Siri or Alexa uses Artificial Neural Networks to understand the instructions given by the user in the form of voice. The network will learn different voice patterns and associate them with the correct instructions.

In addition, Artificial Neural Networks can also be used in handwriting recognition. For example, a bank can use Artificial Neural Networks to process checks received and check whether the check is valid or not based on the handwriting of the account holder.

In all the above examples, Artificial Neural Networks are used to process data and learn patterns from that data to provide accurate and useful results.

3.3. Implementation of AI in Islamic Education

In the context of current technological developments, Artificial Intelligence (AI) has become an inseparable part of the journey of time. This technology has not only changed human lifestyles, but also the way

we work, learn, and interact. Various innovations continue to emerge, making our activities and work easier to be more practical and effective.

In the context of education, the use of AI technology has the potential to increase efficiency, accuracy, and personalization in the learning process. AI technology also provides the possibility of accessing broader and more affordable educational content for the community. Therefore, the use of AI technology in education can make a significant contribution to improving the overall quality of education.

Here are some examples of AI applications based on Islamic Education:

1) Quran AI
   This application uses AI technology to help users learn the Quran more easily and effectively. This application can read and translate verses of the Quran in various languages, provide explanations of the meaning of the verses, and provide suggestions for improving reading and pronunciation.
2) Islamic Learning AI
   This application provides various learning materials about Islam, such as Islamic history, aqidah, fiqh, tafsir, and others. This application uses AI technology to adapt learning materials according to the needs and abilities of users, so that learning becomes more effective.
3) Islamic Quiz AI
   This application provides quizzes about Islam to test the user's knowledge. This application uses AI technology to create questions that are appropriate to the user's level of knowledge, so that users can test themselves effectively.
4) Islamic Reminder AI
   This application provides reminders about Islamic worship and practices, such as prayer times, fasting times, and others. This application uses AI technology to customize reminders according to the user's needs and preferences, so that users can perform worship more regularly and effectively.
5) Islamic Chatbot AI
   This application provides a chatbot that can help users ask questions about Islam. This application uses AI technology to understand user questions and provide appropriate and accurate answers, so that users can gain an understanding of Islam more easily and quickly.
   However, it should be noted that the use of AI technology in education also has certain challenges and risks, such as concerns about student data privacy and security, as well as the risk of replacing the role of teachers with technology that can threaten the sustainability of the teaching profession. Therefore, the use of AI technology in education must be carried out carefully and considering all related aspects.

3.4. The Impact of Using Artificial Intelligence in the Process of Islamic Education

In this study, a selection of several articles and books related to the use of AI technology in the context of Islamic education has been carried out. The articles or books were selected based on certain criteria and published in the period 2010 to 2023, which were published in various academic journals and online mass media.

Positive Impact

The following is an explanation of the positive impacts of using AI in Islamic Religious Education learning:

1) Personalization of learning

   AI plays an important role in personalizing learning by collecting and analyzing data on students' individual needs, preferences, and development. Based on this data, Artificial Intelligence (AI) then provides a learning experience tailored to the needs of each student (Maufidhoh & Maghfirah, 2023). AI can be used to evaluate students' understanding and interests in Islamic Religious Education subjects. Therefore, the curriculum and learning materials can be adjusted to individual needs, allowing each student to learn more effectively.

2) Automatic Assessment

   AI is often used for assessment and automatic question assessment purposes through online platforms. This feature makes it easier for teachers and instructors to compile and conduct quizzes and tests in a simpler and

   more practical way. Teachers and instructors no longer need to create questions and correct answers manually, because the AI system can work according to programmed instructions and can learn from user or student habits (Mufid et al., 2022). Thus, AI can be used to automate assignment assessments and exams in Islamic Religious Education subjects.

3) Virtual Tutor

   This system operates by utilizing machine learning technology, which allows the system to understand teaching patterns and techniques through interactions with students. The AI tutor system can provide automatic feedback and suggestions, as well as provide additional materials and exercises to help students improve their understanding of a particular topic (Afrita, 2023). The AI system can function as a virtual tutor who is ready to guide students in understanding the concepts of Islamic religious education, answer student questions, and provide guidance in carrying out religious practices.

4) Smart Content

   The use of artificial intelligence in smart content makes it easier to search, group, and find digital materials and books that have been programmed virtually faster and more efficiently. Examples of the use of this technology can be found in various digital libraries, both in schools, colleges, and public libraries. Artificial intelligence can help find and categorize the books needed quickly and in an organized manner. In fact, recommendations for books and related content can be provided according to the search conducted.

5) Voice Assistant

Voice Assistant is also one of the most well-known AI technologies and is widely used in various fields, including education. Common examples of Voice Assistants are Google Assistant (Google), Siri (Apple), and others (Tjahyanti et al., 2022). Voice Assistant allows students to search for materials, question references, articles, and books on Islamic Religious Education simply by speaking or mentioning keywords.

Negative Impact

Artificial Intelligence (AI) technology is basically similar to tools or media in general, which have the potential to provide benefits or harm. For example, like a knife that when used by a housewife, will be very useful in processing food in the kitchen, but when given to a small child, it can be dangerous because they may not understand its function and potential dangers. Likewise with AI technology, if not used wisely and proportionally in learning activities, it can have a negative impact.

Some of the negative impacts of the use of Artificial Intelligence in learning include: (1) Excessive use of AI can result in student dependence on AI technology, which in turn can lead to laziness in learning and lack of initiative in thinking, and has the potential to reduce student literacy levels. (2) There is a risk of plagiarism, especially when using an AI-based essay writing system such as the GPT chat developed by OpenAI. This system is designed to generate essays based on certain parameters or instructions, which have the potential to be misused by students to cheat in doing their assignments by submitting essays that are not their original work (Dehouche, 2021). AI can take on the role of a teacher in providing answers to questions about religion and morality. Therefore, teachers need to build strong relationships with students to continue to influence their knowledge of Islamic religious education in the classroom.

4. Conclusion

The results of the performed literature selection indicate that artificial intelligence (AI) technology has significant promise for accelerating the advancement of Islamic education. AI has the potential to improve learning outcomes and efficiency in the classroom while also fostering students' independence. It should be highlighted, nonetheless, that the application of AI is still restricted to Type I (reactive machines) and Type II (limited memory), meaning that more advancement is required to yield the best results for the advancement of Islamic education. To overcome current obstacles and find suitable models and tactics, more study is required in the context of AI development and implementation in Islamic education. Teachers and education management also require training and competency development to enhance their knowledge and proficiency in utilizing AI technology in the classroom. The quality and efficacy of the learning process are greatly enhanced by the application of AI technology in the classroom. But in order for students to develop into decent people and contribute to society, moral education must continue to be at the core of education.

The use of AI has great potential to increase efficiency and effectiveness in Islamic religious education learning. Some applications of AI that can be used in learning activities include: AI as a learning personalization tool based on individual needs, AI used as an automatic assessment tool for teachers in learning activities, AI as a virtual tutor ready to help students understand Islamic religious education concepts, answer student questions, and provide guidance in carrying out religious practices. AI as smart content functions to share and find digital material content and books that have been programmed virtually more easily and quickly. AI as a voice assistant allows students to search for materials, question references, articles, and books on Islamic Religious Education by simply speaking or mentioning keywords. However, there are negative aspects related to the impact of using AI in learning activities such as the use of AI which causes students to be dependent on AI technology, resulting in laziness in learning or laziness in thinking, as well as the risk of plagiarism in making student assignments. In the long term, AI can be a very valuable tool to support Islamic religious education learning, as long as it is used wisely and integrated well into the learning system.

Acknowledgements

We would like to thank Universitas Ahmad Dahlan and especially Universitas Muhammadiyah Sumatera Utara for providing support in the process of creating this article.

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