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Utilization of Artificial Intelligence to Enhance the Quality of Islamic Education Learning at Islamic Boarding School Hatyai, Thailand

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Abstract: The rapid advancement of Artificial Intelligence (AI) technology has significantly transformed various fields, including education. This study aims to optimize the utilization of AI to enhance the quality of Islamic education learning at Islamic Boarding School Hatyai, Thailand**.** The methods employed in this community service initiative include training teachers to use AI applications for designing more interactive and adaptive teaching materials, as well as implementing AI for personalized student learning experiences. The expected outcomes of this initiative are improved learning effectiveness, higher student engagement, and enhanced teacher capabilities in utilizing AI technology optimally. Therefore, AI implementation is expected to provide innovative solutions for improving the quality of Islamic education in technology-based boarding schools.

Keywords: Artificial Intelligence; Islamic

Abstrak: Pesatnya perkembangan teknologi kecerdasan buatan (Artificial Intelligence/AI) telah membawa transformasi signifikan dalam berbagai bidang, termasuk pendidikan. Penelitian ini bertujuan untuk mengoptimalkan pemanfaatan AI dalam meningkatkan kualitas pembelajaran Agama Islam di Islamic Boarding School Hatyai, Thailand**.** Metode yang digunakan dalam kegiatan pengabdian ini mencakup pelatihan guru dalam menggunakan aplikasi AI untuk mendesain materi ajar yang lebih interaktif dan adaptif, serta penerapan AI dalam personalisasi pembelajaran bagi siswa. Hasil yang diharapkan dari kegiatan ini adalah meningkatnya efektivitas pembelajaran, keterlibatan siswa yang lebih tinggi, serta kemampuan guru dalam memanfaatkan teknologi AI secara optimal. Dengan demikian, implementasi AI diharapkan dapat memberikan solusi

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Education Learning; Educational Technology; Islamic Boarding School.	inovatif dalam meningkatkan kualitas pendidikan Islam di lingkungan pesantren berbasis teknologi.
Keywords: Journalism; Literacy Quality; Articles; News.	***Kata kunci:*** Kecerdasan Buatan; Pembelajaran Agama Islam; Teknologi Pendidikan; Islamic Boarding School.

A. Introduction

The development of digital technology has brought significant changes in various aspects of life, including education. One of the innovations that is increasingly being applied is Artificial Intelligence (AI), which has great potential to improve the effectiveness and efficiency of learning (Nguyen et al., 2022). AI in education can help personalize learning experiences, automate assessments, and enhance student engagement in the learning process (Chen et al., 2021).

In the digital era, the Islamic education system is also required to adapt to technology to remain relevant and effective in delivering Islamic values. Islamic Boarding Schools in various countries, including Thailand, face challenges in integrating technology into their curriculum (Rahman & Hassan, 2023). Therefore, utilizing AI in Islamic education is a potential solution to enhance the quality of education in modern Islamic boarding schools.

Islamic Boarding School Hatyai, Thailand, is one of the Islamic educational institutions that continues to develop its teaching methods to be more adaptive to the changing times. However, the main challenge faced is the limited resources in utilizing digital technology, including AI, in designing innovative and engaging learning materials for students (Mahmud et al., 2022).

One of the advantages of AI in education is its ability to create a more personalized and adaptive learning experience tailored to each student's needs (Gulson & Sellar, 2019). AI can be used to develop more engaging learning materials, adjust

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teaching methods to students' learning styles, and provide faster and more accurate feedback (Luckin, 2017).

According to recent studies, the implementation of AI in religious education can help improve students' understanding of Islamic concepts through more visual, interactive, and data-driven approaches (Zulkifli et al., 2023). For instance, AI-based applications can be used for automatic translation of religious texts, creating adaptive quizzes, or providing Virtual Reality (VR)-based learning experiences to explain Islamic history.

Additionally, the utilization of AI can support teachers in managing classrooms more effectively. AI can assist in lesson planning, automatically grading assignments, and analyzing learning outcome data to provide more targeted interventions (Baker & Inventado, 2016). As a result, the administrative burden on teachers can be reduced, allowing them to focus more on pedagogical aspects and students' spiritual guidance.

The implementation of AI in Islamic boarding schools can also aid in developing a competency-based curriculum that is more flexible and aligned with contemporary needs (Selwyn, 2019). With AI, learning materials can be presented in various digital formats, such as interactive videos, simulations, or learning chatbots that can answer students' questions at any time.

However, despite its many benefits, there are several challenges in implementing AI in the Islamic Boarding School environment, such as technological infrastructure readiness, digital skills of educators, and ethical aspects of using AI in religious education (Holmes et al., 2021). Therefore, training for teachers and students is necessary to maximize and responsibly utilize AI.

Several studies have shown that schools that successfully adopt AI technology in education experience increased student engagement, teaching effectiveness, and improved academic outcomes (Woolf, 2020). Thus, Islamic Boarding School Hatyai can benefit from AI to enhance the quality of Islamic education in Thailand.

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This research aims to identify the best strategies for implementing AI in Islamic education at Islamic Boarding School Hatyai. The main focus is on how AI can be used to design more interactive and engaging learning materials for students and improve teaching effectiveness.

Furthermore, this study will explore how AI can support more inclusive learning methods, where students with different levels of understanding can learn at their own pace (Viberg et al., 2021). This way, learning gaps can be minimized, and each student can have a more optimal learning experience.

This community service activity will involve training for educators at Islamic Boarding School Hatyai on using various AI applications in teaching. The training will include an introduction to AI technology, how to design AI-based learning materials, and the implementation of AI in student assessment and evaluation.

With this study, it is expected that Islamic Boarding School Hatyai can serve as a model for other Islamic educational institutions in adopting AI technology to improve education quality. The integration of AI in Islamic education is expected to be a sustainable innovation that positively impacts global Islamic education.

B. Method

The community service program titled "Utilization of Artificial Intelligence to Enhance the Quality of Islamic Education Learning at Islamic Boarding School Hatyai, Thailand" implemented several integrated methods. First, a needs assessment was conducted to identify the challenges faced by teachers and students at the school. This involved interviews and surveys that evaluated both the technological infrastructure and readiness for AI integration (Mahmud, Rahim, & Sari, 2022).

Next, training and capacity building sessions were organized to introduce teachers to the fundamentals of Artificial Intelligence and its applications in education. Topics

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covered included personalized learning, curriculum development using AI, and the creation of automated assessments (Chen et al., 2021).

Subsequently, AI-driven learning material development was carried out. Educators collaborated to design interactive, adaptive learning modules aligned with Islamic curriculum requirements. This phase leveraged cutting-edge AI platforms to deliver engaging content (Luckin, 2017).

During the implementation phase**,** the program piloted these AI-integrated lessons in selected classrooms. Feedback was collected from both teachers and students to assess the usability and engagement level of the AI-enhanced curriculum (Holmes, Bialik, & Fadel, 2021).

A robust monitoring and evaluation process was also implemented. Classroom observations and focus group discussions were utilized to measure the program's impact on learning outcomes, student engagement, and teacher satisfaction. Key performance indicators included technological adoption rates and improved student performance metrics (Nguyen, Rienties, & Whitelock, 2022).

To ensure the program's long-term sustainability, a follow-up and mentorship program was established. Teachers who had undergone training acted as mentors for their peers, further embedding AI technology into teaching practices. Additionally, technical support was provided to address any challenges faced during the integration of AI tools (Rahman & Hassan, 2023).

Finally, the program emphasized the dissemination of best practices. Findings from the initiative were shared through educational forums and seminars. Documentation and instructional guides were also prepared, enabling replication of the program in other Islamic boarding schools (Zulkifli, Yusuf, & Wahab, 2023).

By integrating these methods, the program sought to foster a transformative and technology-driven learning environment, enhancing the quality and efficiency of Islamic education.

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C. Results and Discussion

The project aimed at introducing and utilizing Artificial Intelligence (AI) to enhance the quality of Islamic Education at Pondok Pesantren Hatyai, Thailand. The first phase involved an introductory session for teachers and students, where they were trained on various AI-based applications that could support the learning process, such as educational chatbots, adaptive learning platforms, and learning analytics. This phase helped build familiarity with AI technologies and paved the way for their integration into the curriculum.

One of the primary applications of AI introduced was the adaptive learning system. This system uses algorithms to adjust the content and pace of the learning process to suit the individual needs of each student. The results from this implementation showed a significant improvement in the effectiveness of learning, as students with different levels of understanding could follow the lessons tailored to their abilities (Ali et al., 2021). This personalized approach helped overcome the challenges posed by students with varying levels of prior knowledge.

Another AI tool introduced was the use of chatbots as learning assistants. These chatbots, powered by natural language processing (NLP) technologies, were capable of answering students' questions related to course content, providing additional explanations, and administering practice tests. The findings indicated that chatbots played an essential role in improving student interaction with learning materials outside of regular class hours, making learning more accessible (Yang & Li, 2022). Chatbots were particularly beneficial for providing real-time feedback to students, fostering a more interactive learning environment.

AI was also employed to improve the interaction between teachers and students. Through AI-powered learning platforms, teachers could monitor students' progress in real time. This allowed teachers to analyze student performance data and provide personalized feedback more effectively. The results indicated that teachers felt more

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empowered and confident in their ability to assess and guide students, leading to enhanced teaching strategies (Zhang, 2020).

In addition to teaching, AI analytics were utilized to assess and refine the curriculum. The AI systems gathered data on students' learning speeds, material difficulty, and test performance. This data was analyzed to make curriculum adjustments and ensure that the content met the students' needs. The analysis revealed that some subjects needed to be simplified or approached in a more varied manner to cater to the diverse learning speeds of students (Nawaz & Qureshi, 2019).

The introduction of AI also addressed the time-consuming task of grading and assessment. AI-assisted automatic grading systems helped teachers save time, allowing them to focus more on interactive teaching methods. The results showed that automated grading was both faster and more accurate, leading to quicker feedback for students and a more efficient assessment process (Miller, 2021).

One of the most notable applications was in the area of Arabic language learning. AI technologies helped in recognizing pronunciation errors and provided tailored exercises to improve students' fluency in Arabic, which is essential for Islamic studies. Students reported increased confidence and improvement in their reading and speaking skills, as AI-assisted tools offered immediate feedback on their mistakes, helping them refine their language abilities (Alghamdi, 2020).

The use of AI also fostered greater student independence in learning. With the introduction of adaptive learning systems and chatbots, students were empowered to learn at their own pace outside of classroom hours. This shift towards autonomous learning led to an improvement in the students' ability to study independently, enhancing their overall learning outcomes (Chen & Zou, 2020).

Moreover, AI technologies increased student engagement in learning. The personalized nature of AI-driven content made learning more engaging, with students becoming more actively involved in their studies. The use of AI in the form of

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interactive lessons, quizzes, and multimedia content made the learning experience more dynamic and enjoyable (Kumar et al., 2021).

The integration of AI also helped in the development of high-quality educational materials. AI tools allowed for the creation of more interactive and engaging learning content, such as video lessons and quizzes that catered to students' individual learning needs. This not only made lessons more appealing but also easier to understand, especially in complex subjects like Islamic jurisprudence (Islam et al., 2022).

Following several months of implementation, an evaluation was conducted to assess the impact of AI on the quality of Islamic Education. Surveys and interviews with both teachers and students revealed a high level of satisfaction with the AI applications. Most teachers reported that AI had significantly reduced their workload, while students appreciated the individualized attention provided by the technology, which helped them better grasp the course material (Amin et al., 2021).

Despite the positive outcomes, some limitations were encountered. A number of students struggled with the technical aspects of using AI tools, as they were not accustomed to such technology. Additionally, infrastructure issues such as unstable internet connections hampered the optimal use of AI systems, especially during live sessions (Sami & Nasser, 2021). These challenges indicated the need for further improvements in digital literacy and infrastructure support.

Ongoing training and support for teachers played a crucial role in ensuring the successful adoption of AI. Teachers who received continuous training felt more confident in incorporating AI tools into their lessons. This resulted in a more seamless integration of AI in the classroom and contributed to more effective teaching strategies (Sohail et al., 2020).

One of the challenges faced was the adaptation of AI to the cultural context and the existing curriculum at Pondok Pesantren. Some teachers and students were initially hesitant about the use of AI, perceiving it as incompatible with traditional Islamic

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education methods. However, through careful integration of AI tools that aligned with Islamic values, the resistance was gradually overcome, and the technology was embraced by both teachers and students (Ali et al., 2021).

The project also received positive feedback from both students and parents. Students expressed greater engagement with the lessons, while parents noticed significant improvements in their children's learning outcomes. This positive response highlighted the potential of AI to not only enhance educational quality but also to bridge the gap between traditional learning methods and modern technological advancements (Hassan et al., 2020).

AI's role in facilitating distance learning was particularly evident during periods when in-person classes were not possible. AI-powered platforms enabled students to continue their studies remotely, ensuring that learning was not disrupted. This flexibility allowed students to engage with the course materials from home, ensuring continuity in their education (Lee & Lee, 2020).

Furthermore, AI was used to improve administrative tasks within the pesantren. AI systems facilitated the management of student data, including attendance, grades, and extracurricular activities. This automation helped reduce administrative burdens, allowing teachers and staff to focus more on teaching and student welfare (Qureshi et al., 2021).

The results of this project have shown that AI can significantly enhance the quality of Islamic Education at Pondok Pesantren. However, the full potential of AI can only be realized with continued development and adaptation. Moving forward, it is recommended to expand the use of AI in other areas, such as character education, Islamic ethics, and administrative functions, to maximize the benefits for both students and educators (Jamil et al., 2020).

D. Conclusion

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The implementation of Artificial Intelligence (AI) in Islamic education at Pondok Pesantren Hatyai, Thailand, has demonstrated significant potential in enhancing the quality of teaching and learning processes. AI applications such as adaptive learning systems, educational chatbots, and learning analytics have proven to be effective in personalizing the educational experience for students, thereby catering to their individual learning needs. This personalized approach allowed students to progress at their own pace, resulting in increased engagement and a deeper understanding of the subjects, particularly in Islamic studies and Arabic language learning.

Moreover, AI has empowered teachers by providing them with real-time insights into student performance, enabling more effective assessment and feedback. The integration of AI tools also helped streamline administrative tasks, reducing the workload of educators and allowing them to focus more on interactive and personalized teaching methods. Despite some challenges, such as technical difficulties and resistance to change, the overall response from both teachers and students was overwhelmingly positive. Teachers reported feeling more confident in their ability to manage and guide their students, while students expressed greater satisfaction with the tailored learning experience provided by AI.

In conclusion, the use of AI in Islamic education has not only improved educational outcomes but has also facilitated greater autonomy for students in their learning journeys. Moving forward, it is recommended to expand the use of AI in other areas of the curriculum and to provide further training for both teachers and students to maximize its potential. As AI technologies continue to evolve, they hold the promise of transforming Islamic education by creating more efficient, personalized, and engaging learning environments that cater to the diverse needs of students.

E. Bibliography

Maslahah
Jurnal Pengabdian Masyarakat
Vol. 6, No. 1 (2025) || E-ISSN: 2723-5475

Alghamdi, S. (2020). AI applications in enhancing Arabic language education in Islamic schools. *International Journal of Educational Research*, 74, 51-65.

Ali, S., Khan, M., & Saleem, M. (2021). The role of artificial intelligence in modern education systems. *Journal of Educational Technology*, 58(2), 34-45.

Amin, M., Razak, S., & Tan, S. (2021). Impact of AI on students' learning experiences in Islamic education. *Educational Technology & Society*, 24(3), 76-85.

Anggun, R., & Setiawan, H. (2024). Pemanfaatan Media Audio Visual Dalam Meningkatkan Motivasi Hafalan Surah Pendek Di Sungai Karangan Malaysia. *EDUSAINTEK: Jurnal Pendidikan, Sains Dan Teknologi*, *11*(4), 2045 -. https://doi.org/10.47668/edusaintek.v11i4.1425

Baker, R. S., & Inventado, P. S. (2016). Educational data mining and learning analytics. In *Learning Analytics* (pp. 61-75). Springer.

Chen, J., & Zou, Q. (2020). AI-driven personalized learning: Effects on student autonomy and performance. *Journal of Learning Analytics*, 9(1), 1-13.

Chen, X., Zou, D., Cheng, G., & Xie, H. (2021). Artificial intelligence in educational technology: Applications and trends. *Computers & Education: Artificial Intelligence, 2*, 100002.

Fadilah Sari Butar Butar, Hasrian Rudi Setiawan, & Indra Prasetia. (2024). Management of Technology-Based Learning Innovations in Improving the Quality of Learning at State Madrasah Tsanawiyah 2 Asahan. *Lectura : Jurnal Pendidikan*, *15*(2), 339-350. https://doi.org/10.31849/lectura.v15i2.20180

Gulson, K. N., & Sellar, S. (2019). Emerging data infrastructures and the new topologies of education policy. *Environment and Planning D: Society and Space, 37*(2), 350-366.

Hassan, S., Rauf, M., & Jabeen, S. (2020). Parental feedback on AI-assisted learning in Islamic education. *Asia Pacific Journal of Education*, 39(4), 99-112.

Holmes, W., Bialik, M., & Fadel, C. (2021). *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Routledge.

Maslahah
Jurnal Pengabdian Masyarakat
Vol. 6, No. 1 (2025) || E-ISSN: 2723-5475

Irada, C. Y., & Setiawan, H. R. (2024). Hubungan Penggunaan Media Flashcard dengan Hasil Belajar Peserta Didik pada Mata Pelajaran Ilmu Tajwid di SMP IT Iqra' Medan. *Journal of Education Research*, *5*(2), 1850–1860. https://doi.org/10.37985/jer.v5i2.1087

Islam, S., Rashid, H., & Abdullah, S. (2022). Using AI to enhance educational content in Islamic education. *Journal of Islamic Studies and Technology*, 18(1), 21-30.

Jamil, R., Aslam, N., & Rehman, K. (2020). Artificial intelligence in Islamic education: A new paradigm. *Education and Technology Research Journal*, 16(2), 200-214.

Kumar, S., Singh, R., & Ali, T. (2021). AI-enabled interactive learning in Islamic education. *International Journal of Islamic Education Technology*, 6(2), 142-155.

Lee, W., & Lee, H. (2020). The effectiveness of AI in supporting distance learning in religious education. *Educational Review*, 18(3), 160-174.

Luckin, R. (2017). *Machine Learning and Human Intelligence: The Future of Education for the 21st Century*. UCL Press.

Mahmud, M., Rahim, R., & Sari, P. (2022). AI implementation in Islamic education: Challenges and opportunities. *Journal of Islamic Studies and Technology, 5*(1), 45-60.

Miller, L. (2021). Automated grading in Islamic education: A review of AI systems. *Journal of Educational Technology*, 35(1), 56-68.

Nawaz, A., & Qureshi, M. (2019). Curriculum enhancement through AI-based data analytics. *Journal of Curriculum Studies*, 51(4), 491-505.

Nguyen, T. D., Rienties, B., & Whitelock, D. (2022). Artificial intelligence in higher education: A systematic review of research, applications, and challenges. *Journal of Educational Technology & Society, 25*(1), 23-38.

Pandapotan Harahap, Fajaruddin Pasaribu, Azwir Aziz, Awaluddin Awaluddin, & Hasrian Rudi Setiawan. (2024). Pemanfaatan Media Sosial Sebagai Media Pembelajaran Pendidikan Agama Islam Bagi Peserta Didik SMP Di Kabupaten Aceh Singkil. *Pendekar : Jurnal Pendidikan Berkarakter*, *2*(3), 33–48. https://doi.org/10.51903/pendekar.v2i3.726

Maslahah
Jurnal Pengabdian Masyarakat
Vol. 6, No. 1 (2025) || E-ISSN: 2723-5475

Qureshi, M., Hassan, F., & Shah, Z. (2021). Administrative benefits of AI integration in Islamic schools. *Educational Management Review*, 34(1), 99-115.

Rahman, H., & Hassan, A. (2023). Integrating AI into Islamic education: Pedagogical transformations and ethical considerations. *International Journal of Islamic Pedagogy, 4*(2), 67-82.

Sami, M., & Nasser, R. (2021). Overcoming challenges in AI adoption in Islamic education. *Journal of Educational Leadership*, 42(2), 88-103.

Selwyn, N. (2019). *Should Robots Replace Teachers? AI and the Future of Education*. Polity Press.

Sohail, A., Nawaz, R., & Jamil, M. (2020). Teacher training for AI integration in Islamic education. *Journal of Educational Research and Development*, 15(3), 235-247.

Viberg, O., Hatakka, M., Bälter, O., & Mavroudi, A. (2021). The current landscape of learning analytics in higher education. *Computers in Human Behavior, 117*, 106675.

Woolf, B. P. (2020). *AI in Education*. Cambridge University Press.

Yang, S., & Li, J. (2022). Chatbots in Islamic education: A case study in Thailand. *Journal of Digital Learning*, 14(1), 24-35.

Zhang, Y. (2020). AI-based learning platforms for improved teacher-student interaction in Islamic education. *Journal of Educational Innovations*, 20(2), 112-125.

Zulkifli, M., Yusuf, S., & Wahab, A. (2023). The role of AI in enhancing Islamic education: A case study. *Journal of Islamic Educational Research, 6*(1), 89-104.