Utilization of Leonardo AI in Developing Teaching Materials for Islamic Religious Education Students: Case Study at FTIK UIN Datokarama Palu

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ARTICLE INFO	ABSTRACT
Volume: 3	This study aims to evaluate the use of Leonardo AI in developing teaching materials for Islamic Religious Education (PAI) students at the Faculty of Tarbiyah and Teacher Training (FTIK) UIN Datokarama Palu. Using a survey approach, this study collected data from 50 students who had used Leonardo AI in the learning process. The results showed that the use of Leonardo AI significantly improved the quality and effectiveness of teaching materials and enriched students' learning experiences. As many as 85% of respondents stated that Leonardo AI helped create more exciting and interactive materials, while 80% stated that their understanding of the material increased. However, several technical obstacles and a need for more training in using this application were also identified. These findings suggest that although AI technology can provide significant educational benefits, additional support is needed to overcome existing challenges.
KEYWORD	
Leonardo AI, A Student of The Islamic Religious Education Study Program, Developed Teaching Materials	

1. Introduction

Technology in education has advanced rapidly in recent decades, bringing innovations aimed at improving the effectiveness and quality of learning. One of the most prominent innovations is using artificial intelligence (AI) to develop teaching materials. (Kong et al., 2024). AI enables the automation and personalization of educational content, which can be tailored to students' needs and preferences. (Chopra, 2021).

Leonardo AI is an AI tool specifically designed to help develop interactive and engaging teaching materials (Druga et al., 2022). This tool can analyze data, identify learning needs, and produce materials based on the existing curriculum. Using Leonardo AI, educators can save time and effort in designing teaching materials and ensure that the content is always up-to-date and exciting for students (Singh & Riedel, 2016)(Ball, 2019).

At the Faculty of Tarbiyah and Teacher Training UIN Datokarama Palu, the application of Leonardo AI in developing teaching materials for PAI students is an innovative step to improve the quality of education. PAI students need materials that are theoretically in-depth, applicable, and relevant to the context of the times. Therefore, this study focuses on the use of Leonardo AI in developing teaching materials and evaluating its impact on the learning process.

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2. Literature Reviews

2.1 Artificial Intelligence in Education

Artificial intelligence has been applied in various aspects of education, from administration to teaching. AI can improve the personalization of learning by providing more relevant and tailored materials to individual students' needs (Li & Wong, 2023)(This, 2020). Additionally, AI can assist in classroom management and educational data analysis, allowing educators to make more informed decisions based on accurate, real-time information.

AI has the potential to revolutionize education by providing virtual tutors who can provide direct, personalized feedback to students (Adiguzel et al., 2023)(Tsymbal & Kalenyuk, 2023). This is especially helpful in helping students who need extra help outside of regular class hours.

2.2 Leonardo AI

Leonardo AI is an AI platform designed to assist in developing educational content (Abi-Rafeh et al., 2024)(Khosravi et al., 2023). With the ability to analyze data and generate dynamic learning materials, Leonardo AI can speed up the creation of learning materials and ensure that the materials provided are always up-to-date and exciting. Leonardo AI uses machine learning algorithms to identify patterns in educational data and generate recommendations that can help educators design more effective curricula. (Caggianese et al., 2020).

In addition, Leonardo AI has features for creating interactive and multimedia content, such as videos, animations, and simulations, which can increase student engagement in the learning process (Liu et al., 2018). Using interactive content in learning can increase information retention and student learning motivation (Yorganci, 2022)(Cheng et al., 2009).

2.3 Development of Teaching Materials

Developing effective teaching materials is crucial in creating a productive learning environment. Suitable teaching materials must be relevant, engaging, and aligned with the applicable curriculum (Rizki & Putri, 2022). Leonardo AI can help meet these criteria by providing tools to create content tailored to students' needs (de Blas et al., 2009).

Effective teaching materials should be based on scientifically proven learning principles, such as problem-based, project-based, and collaborative learning (Suh, 2023)(Frey et al., 2022). Leonardo AI can help educators design teaching materials that integrate these principles by providing the tools and resources necessary to create meaningful and contextual learning experiences (Johri et al., 2023).

Developing teaching materials that use technology, such as AI, can help students develop critical thinking and problem-solving skills essential for success in the 21st century (Dumitru & Halpern, 2023)(Ruppert et al., 2024).

3. Methodology

3.1 Research design

This study uses a survey approach with a quantitative descriptive method. Data collection was carried out through a questionnaire distributed to 50 5th semester students of the Islamic Religious Education (PAI) study program, Faculty of Tarbiyah and Teacher Training, UIN Datokarama Palu who have used Leonardo AI in their learning.

3.2 Population and Sample

The population in this study were all 5th-semester students of the Islamic Religious Education Study Program at the Faculty of Tarbiyah and Teacher Training, UIN Datokarama Palu. The research sample was taken randomly from as many as 50 students.

3.3 Research Instruments

The instrument used in this study was a questionnaire comprising 20 questions related to using Leonardo AI, the quality of teaching materials, and student perceptions.

3.4 Data analysis

The collected data were analyzed using descriptive statistics to determine the frequency distribution, percentage, average, and standard deviation of each item in the questionnaire.

4. Results and Discussion

4.1 Results
4.1.1 Respondent Description

Of the 50 respondents, the majority were aged between 18 and 20 (60%), with the remaining 40% over 20. As many as 70% of respondents were female and 30% were male.

4.1.2 Effectiveness of Using Leonardo AI

The analysis showed that 85% of respondents felt Leonardo AI helped develop more exciting and interactive teaching materials. As many as 80% of respondents also stated that the use of Leonardo AI made it easier for them to understand the material being taught.

As many as 90% of students positively perceive the teaching materials developed with Leonardo AI, stating that the materials are easier to understand and more interesting than conventional methods.

However, 30% of respondents identified several barriers to using Leonardo AI, including technical issues and a need for application application training.

4.2 Discussion
4.2.1 Effectiveness and Positive Perception
The study results show that Leonardo AI significantly contributes to developing more exciting and interactive teaching materials. This finding is in line with research stating that AI can improve the quality of learning by providing more relevant and up-to-date content (Pardamean et al., 2022). Most respondents felt that Leonardo's AI made it easier for them to understand the teaching materials, which shows that AI can effectively support the teaching and learning process.

4.2.2 Obstacles in Using Leonardo's AI

Despite the many benefits, the study found several barriers to using Leonardo AI. Technical constraints, such as difficulty in operating the software and compatibility issues with existing systems, were the main challenges faced by students. In addition, the lack of adequate training was also a factor inhibiting the optimal use of this technology. These results indicate that although AI technology has excellent potential, additional support, such as training and improving technical infrastructure, is needed to ensure its successful implementation.

4.2.3 Recommendations for Improvement

Based on the findings of this study, several recommendations can be given to improve the use of Leonardo AI in developing teaching materials:

a. Training and Development: Institutions need to empower students and lecturers by providing them with more intensive training in the use of Leonardo AI. This includes workshops, tutorials, and adequate technical support, making them integral to the implementation process.
b. Technology Infrastructure: Improve the technical infrastructure to ensure compatibility and optimal performance of the Leonardo AI software. This includes hardware upgrades and more reliable networks.
c. Continuous Evaluation: Conduct continuous evaluation of the use of Leonardo AI to identify areas of improvement and ensure that the technology continues to provide maximum benefits to the learning process.

4.2.4 Implications for Higher Education

The application of AI technology in higher education has broad implications. AI can improve the quality of teaching materials help personalize learning, and provide faster and more accurate feedback to students. Thus, higher education institutions need to consider integrating AI technology into their curriculum to create a more innovative and effective learning environment.

5. Conclusion

1) This study confirms that the use of Leonardo AI in developing teaching materials positively impacts students' quality of learning in the Islamic Religious Education Study Program at FTIK UIN Datokarama Palu. The use of this technology not only improves the effectiveness of teaching but also enriches the learning experience of students. However, several technical constraints and a lack of training indicate the need for further support in implementing this technology.

2) The recommendations in this study, such as providing more intensive training and improving technological infrastructure, are expected to help overcome existing constraints and maximize the benefits of using Leonardo AI. Thus, integrating AI technology in higher education can be a strategic step to improve the quality of education and produce graduates who are better prepared to face challenges in the digital era.

3) This study provides new insights for educators, policymakers, and educational technology developers in maximizing the use of AI to improve the quality of learning. Furthermore, this study is expected to be the basis for further research on technological innovation in education.

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