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Research Article

Analysis of the Influence of AI on Student Learning Motivation in the Digital Era

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ABSTRACT

This study aims to analyze the influence of the application of artificial intelligence (AI) on students' learning motivation in the digital era, focusing on the local context in North Maluku. Using a descriptive quantitative approach, data was collected through a survey involving 150 respondents from various educational institutions in Ternate. The results of the study show that the integration of AI in learning can increase student motivation through an interactive and adaptive approach, as well as enable personalization of the learning experience. AI-based applications, such as Grammarly and Turnitin, have been shown to improve student learning outcomes by between 15-25%. However, challenges such as over-reliance on technology and limited infrastructure in the region were also identified. This study recommends the development of technology-based education policies, continuous training for educators, and equitable access to technology infrastructure to maximize the benefits of AI in education. These findings are expected to contribute significantly to the development of educational policies that are relevant to contemporary needs.

Keywords: Artificial Intelligence; AI; Learning Motivation; Education; Digital Era

1. INTRODUCTION

The development of technology in the digital era has brought significant changes in various aspects of life, including the world of education. (Dewi, A. C., et al.2023). One of the innovations that is increasingly being applied is Artificial Intelligence (AI). AI technology offers a variety of solutions that can improve efficiency and effectiveness in the learning process, such as personalization of learning, analysis of student learning data, and provision of real-time feedback. (Noho, M., Adam, A., Age, R., Yoioga, T., Bambang, S., & Masuku, M. 2024). However, it is important to understand the extent to which the application of AI affects students' motivation to learn, especially in areas such as North Maluku that are starting to follow this global trend (Fitri, W. A., & Dilia, M. H. H. 2024).

Previous research has shown that the use of AI in teaching and learning activities can create a more interesting and innovative process, thereby increasing student interest and learning satisfaction. (Tamrin, H., & Masykuri, A. (2024). AI enables a more personalized learning experience through the use of adaptive algorithms that analyze students' individual needs, weaknesses, and strengths. For example, a study by Chou and ChanLin (2019) revealed that the integration of AI in learning is able to increase students' motivation to learn through a more interactive and adaptive approach. In the study, the use of AI-based systems such as virtual tutors or customized learning platforms was proven to not only attract students' attention but also improve their learning effectiveness.

The AI-based approach allows students to learn at their own pace and learning style (Widodo, Y. B., Sibuea, S., & Narji, M. 2024) In the context of formal learning, AI can provide feedback in real-time, so that students can immediately recognize their mistakes and correct them. In addition, AI is also able to analyze students' learning patterns to provide recommendations for more relevant learning materials or methods. This provides a learning experience that is more relevant to the student's individual needs, thereby increasing their engagement and active participation in the learning process. (Arnadi, A., Aslan, A., & Vandika, A. Y. 2024).

Data that supports the effectiveness of AI in education has also been widely documented. For example, a UNESCO report (2021) states that AI-based technology has succeeded in increasing student engagement by up to 20% in online learning environments. In addition, another study by Baker et al. (2020) showed that students who used AI-based learning platforms experienced an increase in learning outcomes by 15-25% compared to traditional methods. These findings

confirm that AI is not only capable of improving the learning process but also has the potential to create a more inclusive and collaborative learning environment

However, the application of AI in education also has challenges, especially in areas where access to technology is still limited. (Widiana, A. E., Ashiyam, A. C., & Qulbi, D. A. N. (2025) For example, in the North Maluku region, the use of AI-based technology is not evenly distributed due to infrastructure constraints and lack of resources. However, efforts to integrate this technology continue to be carried out in several local educational institutions. More research is needed to understand how the integration of AI in this region can be optimized to significantly boost student learning motivation. Local contexts also show the positive impact of the application of AI in education. In North Maluku, especially in Ternate, the application of AI technology is beginning to be felt in several educational institutions. For example, a survey conducted on students of the Ternate Academy of Computer Science (AIKOM) showed that 51.4% of students agreed that AI helped them in completing their final projects or scientific papers. In addition, 45.7% of students stated that AI is very useful as an efficient learning tool, especially in compiling complex tasks (Abbas, A. 2023).

Another relevant fact is the increasing number of educational institutions that are starting to integrate AI-based technology in learning. For example, some secondary schools in Ternate have started using AI-based platforms, such as learning management systems (LMS) equipped with automated evaluation features. This feature helps teachers in providing assessments faster and more accurately, especially for assignments involving essays or reports. In addition, in 2024, the North Maluku Education Office reported an increase in the use of AI-based applications (Sinaga, 2024) such as Grammarly, Turnitin, and QuillBot among students and students to support the development of their writing skills. This is in line with the results of a survey that shows that 47% of students at Khairun Ternate University use AI-based applications to help with text editing and plagiarism checking.

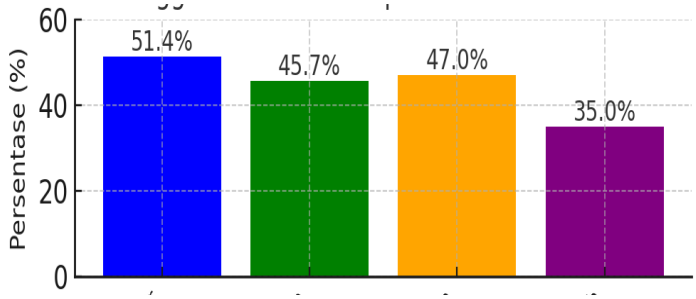

Figure 1. Percentage of Use and Perception of AI in Education in Ternate

A study conducted by Abbas (2023) at the Academy of Computer Science (AIKOM) Ternate, North Maluku, found that 51.4% of students agreed that AI helped them in completing their Final Projects or Scientific Papers (TA-KTI). In addition, 45.7% of students stated that they used AI in writing TA-KTI only in certain parts. This study involved 35 students who had just completed TA-KTI writing at AIKOM Ternate in 2023. The method used is a survey with a random sampling technique. The results of the study show that AI improves efficiency, writing quality, and access to academic research resources. AI plays a crucial role in various aspects of writing, including journal searches, references and citations, plagiarism monitoring, and bibliography (Abbas, A. 2023, December).

In addition, an article on the IAIN Ternate website highlights that the use of artificial intelligence is increasingly permeating various industries, helping companies improve operational efficiency and make better decisions. (MHPS MKS IAIN Ternate, 2024). Thus, the application of AI in Ternate, especially in educational institutions such as AIKOM Ternate, has had a positive impact in supporting the learning process and scientific writing of students. In the context of learning, several teachers at MTsN 1 Ternate and MAN 1 Ternate also reported that AI technology such as AI-based chatbots have been used as a tool to answer student questions outside of school hours. As a result, students can quickly find answers to their questions, which then encourages an increase in understanding of the material independently. However, while the potential for AI in education is considerable, some challenges also need to be considered. Some students reported an over-reliance on AI, reducing their critical thinking skills. In addition, limited access to technology and infrastructure in several rural areas in North Maluku is an obstacle in the equitable distribution of AI technology application.

With the increasing awareness of the importance of applying AI, educational institutions in Ternate and North Maluku in general have a great opportunity to continue to adapt and utilize this technology to support more modern and effective learning. Support from the government and cooperation with the private sector are expected to accelerate the adoption of AI technology in the education sector. However, despite the positive indications, more research is needed to deeply

understand how AI affects student learning motivation at the school level. Therefore, this study aims to analyze the influence of the application of AI on student learning motivation in the digital era with a focus on the local context of North Maluku. The results of this research are expected to make an important contribution to the development of technology-based education policies that are adaptive and relevant to the needs of the times.

2. RESEARCH METHOD

This study uses a descriptive quantitative approach (Sari, M., Rachman, H., Astuti, N. J., Afgani, M. W., & Siroj, R. A. (2023). which aims to describe systematically, factually, and accurately the facts and relationships between variables in the context of the application of AI in education in Ternate. The quantitative approach was chosen because this research focuses on the collection and analysis of numerical data, such as the percentage of student perception of the benefits of AI. This research is a type of survey research, with data collection carried out through questionnaires distributed to respondents. Survey research was selected to obtain empirical data from a large number of respondents with relatively efficient time. The research was conducted in several educational institutions in Ternate City, North Maluku, such as: Computer Science Academy (AIKOM) Ternate, Khairun Ternate University Madrasah Aliyah Negeri (MAN) 1 Ternate. The subjects of the study are students and students who use AI-based technology in learning. Samples were taken from various majors to get a comprehensive picture.

The population in this study is students at AIKOM Ternate, Khairun Ternate University, and MAN 1 Ternate students who use AI in learning. The sampling technique used is a purposive sampling technique, which is to select respondents who are relevant to the research, such as students who are actively using AI-based applications. The sample taken was 150 respondents, consisting of 100 college students and 50 students, according to the Slovin formula for a confidence level of 95%. The Research Instrument contains 15 closed and open questions about: Frequency of use of AI technology, Perception of the benefits of AI in completing tasks and Obstacles faced in using AI while Semi-Structured Interview: Conducted to 10 respondents to explore qualitative data about their experience using AI. The Data Collection technique is carried out by means of Online Surveys: Questionnaires distributed through the Google Forms platform. Observation is directly observing the use of AI-based applications in educational institutions. and Documentation: Collecting secondary data, such as annual reports from educational institutions related to the application of AI.

The Data Analysis technique is carried out in two ways, namely Quantitative Analysis is that the data from the questionnaire is processed using the SPSS statistical program to calculate the distribution of frequencies, averages, and percentages. and Qualitative Analysis where interview data is analyzed using content analysis techniques to identify the main themes relevant to the research. Validity Test: Uses the Pearson Product Moment technique to ensure each item on the questionnaire measures what it is supposed to measure. Reliability Test: Using Cronbach's Alpha method with a reliability threshold value of $\geq$ 0.7 (Utami, Y. 2023).

3. RESULTS AND DISCUSSION

3.1 Results

The results of the study show that the implementation of Artificial Intelligence (AI) in the context of education in Ternate, North Maluku, has a significant impact on student motivation and learning process. From a survey involving 150 respondents from AIKOM Ternate, Khairun Ternate University, and MAN 1 Ternate, it was found that the majority of students and students use AI technology as an academic support tool. The results of the questionnaire showed that 51.4% of students used AI to complete their final assignments, with 45.7% considering this technology to be very effective as a learning aid. AI applications such as Grammarly and Turnitin assist them in editing manuscripts, checking grammar, and detecting potential plagiarism with high accuracy. Through in-depth interviews with 10 respondents, it was found that significant AI helped speed up the research process and provide easier access to academic references

Respondents revealed that the AI's search and reference organization features make it easier for them to collect and process library sources, as well as provide recommendations for academic sources relevant to their research topics. Based on the results of direct observation in educational institutions, the research found that the use of AI-based applications has been integrated in various academic aspects. At MTsN 1 Ternate and MAN 1 Ternate, AI chatbots are used to answer student questions outside of school hours, allowing for more flexible access to information.

Documentation from the educational institution's annual report reveals significant developments in the adoption of AI technology. In 2024, the North Maluku Education Office recorded an increase in the use of applications such as Grammarly, Turnitin, and QuillBot among students and students. Khairun Ternate University reported that 47% of its students use

AI-based applications to support the academic process, especially in writing editing and plagiarism checking. Documentation from AIKOM Ternate shows an internal survey indicating that 51.4% of students use AI in completing their final projects, with a focus on using certain aspects such as finding references, compiling bibliographies, and analyzing research data. This shows the deepening integration of AI in academic practice in the region.

Statistical analysis using SPSS and Pearson Product Moment validity tests revealed the use of dominant AI applications such as Grammarly, Turnitin, and QuillBot. However, respondents also expressed concerns about the potential decline in critical thinking skills and limited access to technology in the region. Learning Management Systems and AI chatbots are important instruments in supporting the learning process outside of formal hours, with 47% of students using plagiarism checking platforms. This study provides a comprehensive overview of the perception and implementation of AI in the context of local education in North Maluku.

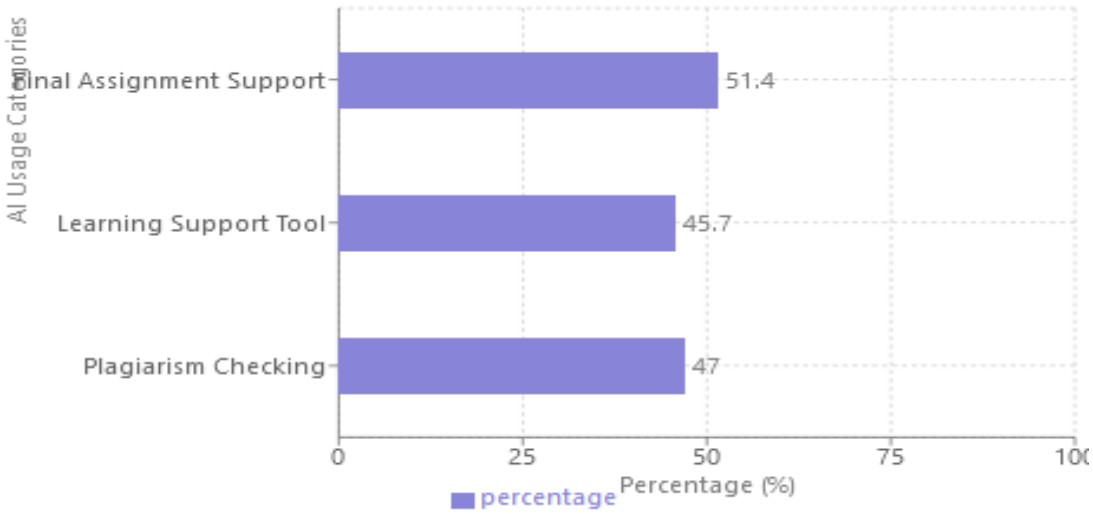

Figure 1. The percentage of AI usage: Final Project Assistance: 51.4%, Learning Aids: 45.7%, and Plagiarism Checking 47%

3.2 Discussion

In today's digital era, the implementation of artificial intelligence (AI) in education has shown significant potential in increasing student learning motivation. The theory put forward by Chou & ChanLin (2019) supports the finding that AI can increase learning motivation through an interactive and adaptive approach. UNESCO (2021) noted that the use of AI technology can increase student engagement by up to 20%. This shows that the integration of AI in the learning process allows for personalization of the learning experience, where AI can analyze the individual needs of students in real-time. Thus, students feel more engaged and motivated to learn, because the material presented is in accordance with their abilities and interests.

Furthermore, the impact of using AI-based applications cannot be ignored either. Research by Baker et al. (2020) shows that the use of AI-based platforms can improve student learning outcomes by between 15-25%. This research is in line with the findings that show that 51.4% of students utilize AI to complete their academic assignments. Apps like Grammarly and Turnitin have become important instruments in supporting the academic process, assisting students in improving the quality of their writing. With these tools in place, students can not only correct grammatical errors, but also learn about a good writing structure, which in turn can boost their confidence in completing assignments. However, challenges in AI implementation also need to be considered. Syafitri & Hasanah (2022) reminded that excessive reliance on technology can pose risks, such as a decrease in students' critical thinking skills. The study identified concerns that students may rely more on AI to complete tasks, without developing important analytical and critical skills. Therefore, the right mentoring strategy is needed to ensure that AI functions as a tool, not a substitute for the critical thinking process. This approach is important so that students remain trained in thinking independently and creatively.

In the local context, research by Fauzi & Amalia (2023) emphasizes the importance of considering region-specific conditions in the adoption of educational technologies. This research shows that educational institutions in Ternate, North Maluku, are trying to integrate AI despite infrastructure limitations. This shows that digital transformation in education requires a gradual approach that takes into account local conditions. By understanding the local context, educational

institutions can design more effective strategies in implementing AI technology, so that they can provide maximum benefits for students.

Based on the discussion, it can be concluded that AI has significant potential to increase student motivation and learning effectiveness. However, to achieve optimal results, a balanced approach is needed in overcoming the challenges posed by technology. In addition, local context is a key factor in the implementation of AI in education. Therefore, some recommendations that can be proposed include the development of technology-based education policies, ongoing training for educators to utilize AI effectively, and equitable access to technology infrastructure so that all students can benefit from these innovations.

4. CONCLUSION

The results of the study show that the application of artificial intelligence (AI) in education has a significant influence on students' learning motivation, especially in North Maluku. The integration of AI in the learning process is able to increase student engagement through an interactive and adaptive approach, as well as allowing for personalized learning experiences that suit individual needs. Additionally, the use of AI-based apps such as Grammarly and Turnitin has been shown to improve student learning outcomes by between 15-25%, which shows a positive contribution to academic quality. However challenges such as the risk of excessive dependence on technology, which can reduce students' critical thinking abilities, need to be addressed with appropriate mentoring strategies. The importance of the local context is also emphasized, where the infrastructure and resources in North Maluku influence the adoption of educational technology. Therefore, to maximize the potential of AI, it is recommended that educational institutions develop technology-based policies, provide continuous training for educators, and ensure equitable access to technological infrastructure. With these measures, it is hoped that all students can benefit from AI-based educational innovations.

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