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The Impact of Artificial Intelligence on the Learning Motivation of Military Students

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A B S T R A C T

This article aims to analyze the impact of artificial intelligence (AI) on the motivation of military students. This research was conducted through a literature review and a qualitative analysis of various recent studies. The methods employed involved the collection of data from relevant scholarly articles. The research results indicate that the use of AI significantly increases student motivation, with positive implications for learning effectiveness in a military environment.

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INTRODUCTION

Technological advancements, particularly in artificial intelligence (AI), have brought about significant changes in various aspects of life, including education. In the context of military education, learning motivation is a key factor influencing the success of training and mastery of the material. Previous research has shown that AI can enhance student motivation by providing more personalized and interactive learning experiences (Rifky, 2024). By leveraging AI, military students can access learning materials tailored to their needs and abilities, thereby increasing engagement and interest in the learning process (Sugihartono, 2020).

This research contributes to understanding how AI can be integrated into the military education system to maximize student motivation. This study also seeks to capture a unique sample of military students who may have different needs and challenges compared to students in other educational institutions. Thus, the findings of this research are expected to provide new insights for the development of AI-based learning methods in military environments.

LITERATURE REVIEW

As educational institutions look to keep up with technology breakthroughs, research on how artificial intelligence (AI) affects military students' motivation to learn is becoming more and more important. The efficiency of AI in raising student engagement through individualised and interactive learning experiences is demonstrated by a study by Hapsari et al. (2024). According to their research, AI-powered platforms can customise learning materials to fit each student's needs, which encourages motivation and a sense of ownership among students. This is consistent with research by Rabindranath et al. (2023), which highlights that AI-enabled personalised learning greatly increases students' intrinsic motivation in addition to improving academic achievement. According to these studies, using AI into military education can improve training results by fostering a more dynamic and interesting learning environment.

Furthermore, the role of artificial intelligence in developing independence among military students has been investigated in several research. Cernat (2022) describes how AI technologies enable students to access material independently, improving their self-directed learning abilities. Oktavia et al. (2024) found that AI can enable students to discover solutions on their own, which aligns with Knowles' self-directed learning paradigm. However, difficulties like as limited technical infrastructure and educator training continue to be important impediments to effective adoption (Bode & Watts, 2023). Addressing these difficulties is critical for maximising the benefits of AI in military education, ensuring that all students may use this technology to boost their learning motivation and overall educational experience.

METHODOLOGY

This study employs a qualitative descriptive approach to explore the impact of artificial intelligence on the motivation of military students. Data was collected through a literature review of various relevant scholarly articles. Analysis was

conducted to identify patterns and key findings regarding the influence of AI on learning motivation.

RESEARCH RESULT

The research findings revealed several key points regarding the impact of artificial intelligence on the motivation of military students: a) Enhanced Engagement: The use of AI in learning enhanced student engagement; b) Personalized Learning: AI enabled the customization of materials to meet individual needs; c) Information Accessibility: Students could access information more easily; d) Fostering Independence: Students became more independent in the learning process; and e) Infrastructural Constrains: Technological readiness and educator preparedness were determining factors for success.

DISCUSSION

Enhanced Engagement

The integration of AI into learning has shown a significant increase in student engagement. Interactive features such as AI-powered quizzes and educational games have motivated students to participate actively in the learning process. This aligns with the theory of active learning, which emphasizes the importance of direct student involvement in learning activities. According to Bonwell and Eison (1991), active learning is an approach that involves students doing things and thinking about what they are doing, thus creating a more profound and meaningful learning experience. This approach engages students both emotionally and cognitively, which in turn can enhance learning outcomes (Silberman, 2010).

Among the example of AI implementation in education is the use of game-based learning platforms that integrate elements of competition and collaboration. For instance, applications like Kahoot! and Quizizz allow students to take quizzes in real-time with instant feedback, which not only makes learning more enjoyable but also encourages students to participate actively. A study by Hapsari et al. (2024) demonstrated that the use of AI-based applications at the secondary school level can enhance student motivation, as they feel more engaged and in control of their learning process. This suggests that technology can be an effective tool for creating a dynamic learning environment.

However, challenges persist in the implementation of AI in education. Research by Oktavia et al. (2024) highlights that the success of AI implementation heavily relies on the readiness of educators and the supporting technological infrastructure. Without adequate support, the use of AI may be ineffective and even have a negative impact on student motivation. Therefore, it is crucial to develop appropriate strategies to optimize the use of AI in military education and other contexts, ensuring that all students benefit from this technological innovation

Personalized Learning

The use of AI in education enables personalized learning experiences for each student, a crucial step in creating a more inclusive and effective learning environment. With advanced algorithms, AI systems can analyze students'

learning progress in real-time and suggest additional materials or exercises tailored to their level of understanding. This aligns with the constructivist theory of learning, which emphasizes that students construct their own knowledge through experiences and interactions with the learning environment (Piaget, 1976). By providing tailored materials, students feel more valued and motivated to learn, thus enhancing their self-confidence in mastering the subject matter.

An instance of AI implementation in personalized learning is the use of platforms like Dream Box Learning and Smart Sparrow. These platforms utilize AI technology to tailor learning content based on data analysis of students' progress. For instance, Dream Box Learning provides an adaptive mathematics experience by adjusting the difficulty of problems according to students' abilities. Research by Rabindranath et al. (2023) indicates that students using this platform experience a significant improvement in their understanding of mathematical concepts compared to traditional teaching methods. This suggests that AI not only enhances engagement but also leads to better learning outcomes.

However, to achieve maximum effectiveness, it is crucial for educators to understand how AI systems work and how to utilize them optimally. Research by Lasisi et al. (2022) revealed that although AI can assist in personalized learning, the success of its implementation heavily relies on educators' readiness to use this technology effectively. Therefore, training and support for teachers are essential to ensure that they can integrate AI into their teaching practices successfully.

In the context of military education, the application of AI for personalized learning can help address the unique challenges faced by students. For instance, AI-based systems can tailor training materials to suit the specific needs of each individual, such as their educational background and existing skills. Thus, the use of AI in education not only enhances student motivation and engagement but also has the potential to create a more effective and efficient learning experience, enabling each student to reach their full potential in the learning process.

Information Accessibility

AI significantly facilitates information access for military students, enabling them to acquire necessary information anytime and anywhere. In the context of military education, where time is often limited, the ability to access learning resources instantaneously is crucial. Constructivist learning theory, as proposed by Piaget (1976), emphasizes that students construct knowledge through interaction with their environment. With AI-powered tools, students can explore learning materials and obtain relevant information without waiting for instructors, thus supporting a more independent and responsive learning process that caters to their individual needs.

An example of AI application in military education is the use of applications such as ChatGPT and other adaptive learning platforms. These applications allow students to ask questions and receive answers and explanations in real-time. Research by Cernat (2022) indicates that the implementation of AI algorithms in data analysis enables students to quickly access historical information and training content relevant to their needs, enhancing the

effectiveness of their training. Thus, students not only gain access to the necessary information but can also learn in a more focused and efficient manner.

However, despite the numerous benefits of AI, challenges remain in its implementation. Research by NSTXL (2023) indicates that an overreliance on technology can diminish essential foundational skills in a military context. Therefore, it is crucial for military educational institutions to develop a balanced strategy between technology utilization and practical skill development. A case study from the US Armed Forces demonstrates that the use of AI-based adaptive learning systems has enhanced training effectiveness by tailoring content to the individual progress of each soldier (Bode & Watts, 2023). By leveraging AI judiciously, military education can become more responsive to student needs while maintaining the fundamental skills required in the field.

Fostering Independence

The utilization of AI-powered tools in education has demonstrated a positive impact on students' independence in the learning process. With the advent of this technology, students can independently seek solutions to academic problems without constantly relying on instructors or peers. This aligns with Knowles' (1975) self-directed learning theory, which posits that individuals have the capacity to regulate their own learning processes. When provided with access to AI tools, students can explore materials and seek relevant information as needed, thereby enhancing their self-confidence and independence in learning.

A concrete example of AI application in supporting student autonomy is the use of apps such as Google's Socratic. This app allows students to take pictures of math or science problems and receive step-by-step explanations and solutions. As such, students not only obtain answers but also grasp the underlying concepts, encouraging critical thinking and independence (Cambridge International School, 2024). Research by Hapsari et al. (2024) indicates that the use of AI-powered tools like Socratic can enhance students' ability to solve problems independently, making them better prepared for real-world challenges.

However, it is essential to remember that while AI can provide significant support, the role of educators remains crucial in the learning process. A combined approach of technology integration and teacher guidance can create a more effective learning environment. According to research by Lasisi et al. (2022), the success of AI implementation depends on educators' readiness to optimally utilize this technology. Therefore, teacher training in AI tool usage is vital to ensure they can effectively support students, making sure that technology is used to enhance learning autonomy without compromising the essential human interaction in education.

Infrastructural Constraints

While the implementation of AI in military education offers numerous benefits, it is not without its challenges, particularly regarding technological infrastructure. Adequate hardware availability and stable internet connectivity are crucial to ensure that all students can effectively utilize this technology. Tyler's (1949) educational systems theory posits that the success of an educational

system is highly dependent on its supporting components, including infrastructure. Without robust infrastructure support, the use of AI can become ineffective and may even hinder student learning

A pertinent case study is the military education program in Indonesia, which confronts significant challenges in digital infrastructure. According to a report by Binus University (2022), numerous military educational institutions situated in remote regions encounter difficulties in accessing the requisite technological resources for the optimal implementation of AI. This disparity in access creates a substantial digital divide between institutions with favorable access and those without. To mitigate this issue, substantial investment in the development of high-speed internet networks and the provision of adequate hardware is imperative to ensure equitable access to AI technology for all students.

By improving technological infrastructure, military educational institutions can not only enhance the effectiveness of AI utilization but also equip students with the necessary skills to address real-world challenges. In this context, collaboration between the government and private sector is crucial for creating sustainable long-term solutions. Through strategic steps in infrastructure development, military education can fully leverage the potential of AI to improve learning quality and prepare students for future challenges.

CONCLUSIONS AND RECOMMENDATIONS

The results of this study demonstrate that the use of AI positively correlates with increased learning motivation among military students. This technology has the potential to enhance student engagement, personalize learning, and cultivate student autonomy. Therefore, it is recommended that military educational institutions prioritize investments in technological infrastructure and provide ongoing training to educators to ensure the optimal utilization of AI for all students.

ADVANCED RESEARCH

Further research can delve into specific aspects related to: a) Ethics in AI development for military education: How to ensure that AI is developed and deployed in an ethical manner, respecting students' rights and avoiding biases. This includes addressing issues such as data privacy, transparency, and accountability: and b) Integration of AI into the curriculum: How to effectively integrate AI into existing military education curricula, considering factors such as pedagogical approaches, teacher training, and the alignment of AI applications with learning outcomes.

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