THE USE OF ARTIFICIAL INTELLIGENCE (AI) MEDIA IN SECONDARY EDUCATION

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ABSTRACT

Digital transformation in education has introduced a number of technological innovations, including the integration of artificial intelligence (AI) media in the learning process. Tunas Bangsa Christian Senior High School, Kupang, is one of the educational institutions that have adopted AI in teaching and learning activities since 2017. This study aims to analyze the use of AI media in learning, focusing on the frequency of students' use of AI and their perceptions of its benefits. The research adopted a quantitative descriptive approach. Data were collected through questionnaires distributed to 75 students across different grade levels. The results show that the majority (64%) of respondents reported a high frequency of AI use in their learning activities. In addition, 86.7% of students said they use AI to search for additional information, and 68% said AI helps them complete assignments more efficiently. The study concludes that AI media have become an integral part of the learning process at Tunas Bangsa Christian Senior High School. The high frequency of AI use and students' positive perceptions suggest that AI plays an important role in promoting students' autonomy, learning efficiency, and engagement.

Keywords: Learning, Use of AI, Student Perception, Tunas Bangsa Christian High School

INTRODUCTION

In recent years, Artificial Intelligence (AI) has increasingly influenced various aspects of human life, including education. In the context of today's digital transformation, the integration of AI in the classroom has gained momentum as a tool for enhancing not only the effectiveness of instruction but also learner engagement and achievement. AI does not merely function as a supplementary technology; it is redefining how students interact with learning materials, how teachers deliver content, and how educational outcomes are measured and achieved. AI-powered systems are capable of providing adaptive learning environments, real-time feedback, and personalised learning pathways, thereby supporting learners with diverse abilities and needs (Chen et al., 2020).

In secondary education, this technological shift is particularly crucial. Students at this level are navigating a critical period of cognitive and emotional development. AI-driven learning media, such as intelligent tutoring systems, personalised learning apps, and automated assessment tools, can respond to individual learning patterns, helping students to engage more deeply with content and develop autonomous learning strategies. Recent studies have indicated that the use of AI in classrooms fosters more active participation and supports differentiated instruction (Zawacki-Richter et al., 2019). Nevertheless, it is also evident that when these technologies are applied without proper pedagogical integration, they may lead to unintended consequences, including overreliance on automation and a decline in critical thinking skills (Luckin et al., 2022).

Indonesia, like many developing nations, is gradually incorporating AI into its educational systems. However, access to such innovations remains uneven, often concentrated in urban schools with sufficient infrastructure and technical support. One notable example is SMA Kristen Tunas Bangsa in Kupang, East Nusa Tenggara. Since 2017, this private high school has incorporated various AI-supported platforms into its teaching practices. Tools such as Quipper, Powtoon, and Google Classroom are used extensively, and the school has developed its own AI-integrated learning app, *Tunas Bangsa App*, which facilitates material access, communication between students and teachers, and scheduling.

The choice to conduct this study at SMA Kristen Tunas Bangsa is based not only on the school's early adoption of AI tools but also on its unique educational philosophy. The school employs a character-building curriculum designed to integrate values-based education with technological innovation. With 14 qualified teaching staff and 75 students—most from middle to upper socioeconomic backgrounds—the school offers a conducive environment for examining both the frequency of AI media usage and students' perceptions of its educational value.

Academic performance at the school has improved over the past three years, with average scores rising from 86.6 in 2021 to 90.8 in 2023. On the surface, this trend might suggest that AI-enhanced learning is a success. However, preliminary observations and interviews with teachers reveal a more nuanced picture. While some students have benefited from interactive and adaptive learning tools, others have shown signs of diminished motivation and critical engagement. A number of learners were observed to rely heavily on AI-generated answers, showing reluctance to engage in deeper analysis or independent study. This growing dependency raises questions about the long-term cognitive and behavioural implications of AI use in education.

While prior studies have highlighted the academic benefits of AI in education, they have largely focused on specific disciplines such as mathematics, science, or language learning, or on outcomes such as test performance or knowledge retention (Fitriani, 2021; Holmes et al., 2021). Few have examined the broader behavioural and perceptual impacts of AI, particularly in holistic educational settings where technology is integrated across subjects and used regularly. Moreover, the dual focus on how frequently students use AI media and how they perceive its usefulness remains underexplored in the context of Indonesian secondary education.

This study therefore seeks to address this research gap by analysing the use of AI media in the learning process at SMA Kristen Tunas Bangsa Kupang. Specifically, it aims to investigate how often students interact with AI-based tools in their daily learning and how they perceive the value and effectiveness of such tools in supporting their academic development. By exploring these dimensions simultaneously, the study hopes to provide a more comprehensive understanding of the role of AI in shaping students' motivation, learning patterns, and educational behaviour.

The findings of this research are expected to contribute both theoretically and practically. On a theoretical level, the study expands current knowledge about the intersection of AI usage, learner engagement, and perception in secondary education. Practically, the results may inform educational stakeholders—particularly school administrators and policy-makers—on how to optimise the implementation of AI media in classrooms to enhance learning outcomes while mitigating potential drawbacks. In a broader sense, this research aspires to support the creation of balanced and ethical frameworks for integrating AI in education that are responsive to the cognitive, emotional, and social development of students in the digital age.

METHODOLOGY

This study employs a descriptive quantitative approach, which enables the researchers to collect numerical data that can be statistically analysed to describe the frequency of AI usage and students' perceptions of its usefulness. The quantitative design is suitable for identifying general patterns and tendencies within the target population in an objective and systematic manner (Creswell & Creswell, 2018).

Data was collected using a closed-ended questionnaire survey. The respondents of this study consist of the entire student population of SMA Kristen Tunas Bangsa Kupang, totalling 75 students from grades X, XI, and XII. Given the relatively small population size and its accessibility, the study does not apply sampling techniques. Instead, a total population sampling approach is used to obtain a comprehensive understanding of the use of AI media within the school's learning context.

The questionnaire was designed to measure two main aspects: (1) the frequency of AI media usage in students' learning activities, and (2) students' perceptions of the usefulness of AI in supporting their academic development. Each statement in the questionnaire was use a five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5).

A pilot study was conducted involving a small group of students from a comparable academic background outside the study population. The results of this trial was used to revise unclear or ambiguous items. Construct validity was assessed using item-total correlation to determine whether each item accurately reflects the underlying concept. Instrument reliability was evaluated using Cronbach's Alpha to assess the internal consistency of the items. A reliability coefficient of 0.70 or higher was considered acceptable for the final version of the questionnaire.

Ethical considerations were carefully observed throughout the research process. Prior to data collection, approval was obtained from the school administration. All participants informed about the purpose of the study, and their participation voluntary and confidential. Respondents were given the right to withdraw at any stage without any negative academic consequences.

The collected data was analysed using descriptive statistical techniques supported by SPSS version 25. The analysis included statistical measures such as mean, standard deviation, minimum and maximum values, and percentage distributions for each questionnaire item. Furthermore, to examine the relationship between AI usage frequency and perceived usefulness, a Pearson product-moment correlation analysis was conducted to determine the strength and direction of associations between the relevant variables.

FINDINGS

Frequency of AI Usage in Learning

The frequency of AI use was assessed through two key statements: "I often use AI in my daily learning activities" and "AI has become an essential component of my learning process at school." These statements yielded mean scores of 3.43 and 3.17, respectively, indicating that a majority of students consistently engage with AI and increasingly recognize its importance in their learning.

Table 1. Frequency of AI Use Indicators

Indicator	Mean	Standard Deviation	Min	Max	% Responses ≥ 4
Frequent Use of AI	3.43	0.82	1	5	64.0%
AI as Part of Learning Process	3.17	0.77	1	5	68.0%

Notably, 64% of respondents rated frequent AI use with a score of 4 or above, and 68% similarly acknowledged AI as integral to their learning process. These findings suggest that AI usage is substantial and embedded within students' academic routines, extending beyond experimental or occasional use. Students utilize AI to comprehend materials, complete assignments, and explore new knowledge domains, aligning with contemporary educational objectives emphasizing technological integration.

Since the introduction of AI at the school in 2017, there has been a shift from passive to active learning paradigms. Students no longer passively receive information but actively seek and process knowledge independently, fostering a dynamic and interactive learning environment supported by adequate technological infrastructure and digital readiness.

Perceptions of AI Usefulness

Students' perceptions of AI as a learning tool are overwhelmingly positive. The statement "I use AI to find additional information during study" scored the highest mean of 4.15, with 86.7% of students agreeing or strongly agreeing. This underscores the perceived efficacy of AI in enhancing knowledge acquisition.

Table 2. Student Perceptions of AI Usefulness

Indicator	Mean	SD	% Responses ≥ 4
Use of AI as a supplementary information source in learning	4.15	0.80	86.7%
Intensity of AI usage for completing academic tasks	2.95	0.88	68.0%

In contrast, the statement "I spend a lot of time using AI to complete tasks" received a moderate mean score of 2.95, though 68% of students still rated it 4 or higher, indicating that a significant portion of students dedicate considerable time to using AI for assignments.

Furthermore, the indicator "AI helps me understand the learning material better" obtained a strong mean score of 4.15, reflecting students' perception that AI facilitates comprehension of challenging concepts. This suggests a transition from traditional learning methods toward a more digital, visual, interactive, and adaptive approach.

Supporting Aspects of Positive Perceptions Toward AI

Students' use of AI extends beyond a mere technical aid, also impacting affective and motivational aspects of learning. Indicators such as "I am more focused when studying with the help of AI" (mean 3.19) and "I feel more confident in learning after using AI" (mean 3.25) suggest that AI contributes to enhancing students' emotional engagement in learning. These scores

indicate that AI helps create a more conducive learning environment, particularly for students who previously lacked confidence.

Table 3. Supporting Factors for Positive Perceptions of AI

Indicator	**Mean**	**SD**
"AI helps me understand the learning material better."	3.88	0.82
"I feel more confident in learning after using AI."	3.25	0.93
"I am more focused when studying with the help of AI."	3.19	0.83
"My study time has increased since using AI."	3.05	0.98

Additionally, the indicator "AI helps me understand the learning material better" received a high score of 3.88, demonstrating that AI offers a more flexible learning approach tailored to individual needs. AI technology can adjust the pace, style, and sequence of learning based on user input, making it suitable for diverse educational contexts. This is consistent with Richard Mayer's Multimedia Learning theory, which emphasizes that combining text and visuals significantly improves students' comprehension.

In this context, positive perceptions of AI arise from a learning experience that is more enjoyable, interactive, and adaptive. Students feel supported in catching up, understanding difficult topics, and accessing new knowledge without relying entirely on teachers. These findings strongly argue that AI is not merely a technical tool but a learning instrument capable of fostering positive and active attitudes toward the learning process.

Correlational Statistical Analysis

To assess the relationship between the frequency of AI use and students' overall perception of its usefulness in learning, a composite variable was created by averaging scores from five indicators:

1) AI helps me understand learning material better
2) I feel more confident in learning after using AI
3) I am more focused when studying with AI
4) My study time has increased since using AI
5) AI assists me in completing tasks

This composite variable represents the general perception of AI's benefits (Y). The independent variable (X) is the frequency of AI use, measured by the statement "I often use AI in daily learning activities." A Pearson correlation analysis was conducted using data from 75 students. The results are as follows:

Table 4. Pearson Correlation between Frequency of AI Use and Perceived Usefulness

Variable Pair	Correlation Coefficient (r)	Interpretation
Frequency of AI Use (X) and Overall Perceived Usefulness of AI (Y)	+0.39	Moderate positive correlation

The moderate positive correlation (r = +0.39) indicates that students who frequently use AI tend to have a more favorable overall perception of its usefulness in learning. This suggests that increased engagement with AI technology is associated with enhanced cognitive benefits (such as better understanding of material), affective outcomes (greater confidence and focus),

and behavioral improvements (more study time and task completion support). This finding underscores the role of consistent AI use in fostering positive learning experiences and attitudes, which are critical for adapting to the demands of 21st-century education.

DISCUSSION

The Pearson correlation analysis revealed a moderate positive correlation ($r = +0.39$, $p < 0.01$) between the frequency of AI usage and students' learning interest at SMA Kristen Tunas Bangsa Kupang. This suggests that students who use AI more frequently tend to exhibit higher levels of motivation and enthusiasm toward learning. While the relationship is not strong, it is statistically significant and highlights the beneficial role of AI as a supportive learning tool.

This finding aligns with previous studies indicating the positive impact of AI on education. For instance, Sugiarso et al. (2024) reported that AI integration at the high school level improves student achievement by providing tailored content and prompt feedback. Similarly, Muchminiin et al. (2022) found that interactive AI features increase student engagement and learning interest among informatics students. Moreover, Meiriza et al. (2024) noted that AI applications foster motivation and interest among Generation Z university students through flexible and engaging learning experiences.

The moderate correlation found in this study may reflect the complex nature of learning interest, which is influenced by multiple factors beyond AI usage alone. Although AI provides personalized and adaptive learning environments, other elements such as teacher guidance, peer interaction, and learning resources also contribute significantly to student motivation.

From a theoretical perspective, the results support Steve H. Chaffee's Uses and Effects theory, which posits that media usage produces varying effects depending on how it is used and the user's responses. In this context, students actively engage with AI to fulfill their learning needs, resulting in increased interest and involvement. McQuail's (1987) view that routine and purposeful educational media use can induce positive cognitive and behavioral changes further strengthens this interpretation.

Bandura's social learning theory also provides insight into these findings, where AI functions as a model for observational learning. Students observe, receive immediate feedback, and internalize learning processes autonomously, promoting self-regulated learning behaviors. This autonomy is crucial in fostering confidence and proactive learning attitudes.

Nevertheless, the moderate strength of the correlation indicates that reliance on AI should be balanced with traditional pedagogical methods to avoid overdependence, as cautioned by Yun Ying (2022). Excessive AI use without sufficient human interaction may reduce students' initiative and critical thinking skills.

Some respondents exhibited excessive dependence on AI for task completion or understanding content, which concurs with Yun Ying's (2022) findings that AI integration can reduce student initiative if not balanced with effective teaching strategies. Therefore, AI usage in learning must be complemented by a humanistic approach from educators to preserve vital social interactions in education.

Furthermore, these findings support Richard Mayer's multimedia learning theory, which states that presenting material in both visual and verbal formats (as AI applications do) enhances student understanding and cognitive engagement (Mayer, 2009). Students at SMA Kristen Tunas Bangsa reported greater interest in materials delivered through videos, interactive simulations, or animation-based explanations compared to conventional textbooks.

From a national education system perspective, this research provides empirical evidence to support digital-based education policies currently promoted by the government. The increased student learning interest through AI indicates significant potential for broad technology implementation, particularly if accompanied by teacher training and adaptive curriculum development.

Nonetheless, the results emphasize the importance of blended learning approaches. While AI effectively boosts learning interest, the teacher's role as a guide, facilitator, and motivator remains irreplaceable. AI serves as a complementary tool, not a substitute for human interaction. Thus, learning strategies integrating technology with appropriate pedagogical methods will yield the most significant improvements in educational quality.

This study presents several significant implications. Firstly, the findings affirm that the consistent utilisation of Artificial Intelligence (AI) can effectively enhance students' learning autonomy. The majority of respondents reported a high frequency of AI usage and acknowledged that AI helped them better understand academic material, improve their focus, and complete tasks more efficiently. This suggests that AI serves not merely as a technical aid, but as a medium that enriches the learning experience through personalisation and interactivity.

Secondly, students' positive perceptions of AI indicate a shift in learning patterns—from passive to more active engagement. When students feel more confident and focused while using AI, it indirectly contributes to improved academic outcomes and more positive attitudes towards learning. This aligns with social learning theory and multimedia learning theory, both of which suggest that combining text, visuals, and interactivity can significantly strengthen cognitive engagement and comprehension.

Thirdly, from an institutional and policy perspective, the findings offer empirical support for national initiatives aimed at digitalising education. The integration of AI-based technologies should be encouraged more broadly in schools across different regions. However, while AI has been shown to enhance learning motivation and efficiency, excessive dependence on such technology may diminish students' initiative and critical thinking skills. This raises new challenges for educators to maintain their essential role as humanistic facilitators and learning mentors.

AI-supported learning must remain grounded in healthy social interaction—between students and teachers, as well as among students themselves—to ensure a balanced approach that combines technological advancement with educational values. Without this balance, the very goals of education may be undermined by a reliance on automation.

CONCLUSION

Based on the research findings, it can be concluded that most students actively use AI to search for additional information, better comprehend learning materials, and complete assignments more efficiently. With a relatively high average score on AI usage indicators and over 64% of respondents reporting frequent use, it is evident that AI has become an integral part of students' academic routines rather than a tool used occasionally.

Moreover, students' perceptions of AI are overwhelmingly positive. Many feel more confident, focused, and motivated to learn. A significant number of respondents stated that AI helped them better understand academic content and encouraged them to allocate more time for independent study. The positive correlation found between frequency of use and perceived usefulness indicates that the more frequently students engage with AI, the greater the perceived benefits in terms of learning outcomes.

Nevertheless, the study also revealed a potential risk of overdependence. Some students exhibited signs of relying too heavily on AI—particularly for completing tasks or seeking quick answers—without engaging in deeper understanding or critical thinking. This highlights the importance of maintaining a balanced approach to learning, where AI is used optimally without diminishing the teacher's role as a key facilitator in the educational process.

Therefore, while AI has proven to be both effective and well-received by students, its application should be framed within an ethical pedagogical framework that prioritises character development and life skills. AI should be positioned as a supporting tool, not as a substitute for teachers or students' independent cognitive processes.

Based on the findings of this study, it is recommended that schools develop comprehensive strategies to integrate AI within the curriculum in a manner that balances technological innovation with humanistic educational values. Teachers should be equipped with sufficient digital pedagogical competencies to effectively guide students in using AI as a supportive learning tool rather than a substitute for critical thinking or teacher interaction. Furthermore, AI implementation should be accompanied by interactive teaching methods—such as group discussions, case studies, and collaborative projects—to mitigate the risk of student overreliance on technology. At the policy level, the government and education stakeholders are encouraged to expand access to AI-supported learning across various regions by investing in digital infrastructure, adaptive local AI platforms, and ongoing teacher training programs. Lastly, future researchers are urged to conduct longitudinal and qualitative studies to further investigate the long-term impacts of AI on students' emotional, social, and character development, providing deeper insights into the ethical and pedagogical considerations of educational technology integration.

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