The Impact of AI-Powered Learning Tools on Academic Achievement among Students in A Private University in East Jakarta

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Abstract

This study investigates the impact of AI-powered learning tools on academic achievement among English Education students at a private university in East Jakarta, addressing the lack of empirical evidence in the Indonesian context. While most prior studies emphasize perceptions, this research quantitatively examines the relationship between AI usage patterns and Grade Point Average (GPA). From a population of 40 fifth-semester students from UHAMKA, 32 completed the survey. Measures included self-reported GPA, AI usage frequency, and an 8-item Likert scale ($\alpha = .945$). Data were analyzed using descriptive statistics and linear regression. Results showed no significant relationship between AI usage frequency and GPA, likely due to the already high academic performance of the cohort. However, students reported using AI strategically for brainstorming, grammar checking, and research support, while also raising concerns about accuracy and academic integrity. These findings suggest that AI functions more as a learning aid and efficiency tool rather than a direct driver of achievement, highlighting the need for clear institutional policies and AI literacy initiatives.

Keywords: AI-powered learning tools; Academic achievement; University students

Introduction

Artificial Intelligence (AI) is a field of computer science where machines learn to perform tasks that humans usually do, including problem-solving, decision-making, and language comprehension. AI systems distinguish themselves from conventional software by their ability to learn and improve their tasks over time through data analysis. AI is an innovative technology in a myriad of fields, including education (García-Martínez et al., 2023). Numerous AI-powered education tools have since been created to aid students. Intelligent tutoring systems, adaptive learning platforms, grammar-checking software like Grammarly, and generative tools like ChatGPT are common. These AI tools offer automation, immediate feedback, and assistance in writing, research, study planning, and revisions. For example, Grammarly enhances the user's text by improving grammar and clarity, while ChatGPT provides assistance in brainstorming and explanation of difficult topics. In Indonesia, adaptive platforms like Ruangguru and Zenius provide personalized lessons to support student progress (Wijirahayu et al., 2025; Fauziddin et al., 2025).

Artificial Intelligence (AI) is changing the global digital learning environment. Universities are using AI to customize learning, quicken assessments, and widen accessibility. Research conducted in the US and Europe shows that AI increases efficiency and helps raise GPAs by assisting students in time management and study organization (Ward et al., 2024; Vieriu & Petrea, 2025). In Asia, students in Guangdong, China, extensively using AI resources to support English learning, contributes to the evidence (Huang, 2024). Alarming issues like plagiarism, dishonesty, and uncritical thinking are AI's educational and ethical challenges. The absence of educational invitation makes AI adaptive for educational research. Studies show AI in education for personalization is more appreciated. Adaptive systems modifying educational content based on student performance increases student motivation. Research shows AI systems improve learning as integration strengthens (García-Martínez et al., 2023). AI increases efficiency as well. Research by Ward et al. (2024) states that though students using AI completed less routine tasks, their performance improved. Higher order tasks are more attainable to students as AI tools like Grammarly and ChatGPT enhances writing and idea generation.

Considerations of integrity and ethical use of AI technologies for learning tools are discussed in the literature. Shalevska and Kostadinovska-Stojchevska (2024) highlight students' concerns regarding integrity, while Haris et al. (2024) underscore the need for AI literacy in Indonesia to mitigate negative impact. Similarly, Wijirahayu et al. (2025) note that students in East Jakarta have a pragmatic understanding of the limitations of Grammarly and integrated AI in their writing processes selectively. Overall, these research findings indicate that students derive value from AI technologies, while still understanding their limitations in certain contexts. Contrary to findings from other parts of the world, research in Indonesia has focused on perceptions and preparedness

rather than on the impact of AI on measurable outcomes, particularly on AI's impact on GPA.

Firdaus et al. (2025) also contend that AI used for routine academic tasks may encourage a lack of of fundamental and imaginative processes expected in higher order tasks. This highlights the need of addressing concerns on the impact of AI on critical academic tasks. Previous research emphasize the advantages AI brings to efficiency, study habits, and motivation (Ward et al., 2024; Vieriu & Petrea, 2025). In the local context, studies have concentrated on adoption barriers, infrastructure, or attitudes (Fauziddin et al., 2025; Wijirahayu et al., 2025). Nevertheless, very few have empirically examined the relationships between the use of AI and GPA. As such, this study aims to fill this gap by investigating students of the English Study Program in East Jakarta using a quantitative correlational approach.

In contrast to research based solely on perceptions, this study examines the relationship of the AI use frequency and its purpose to GPA, contributing more substantial evidence. Specifically, this study seeks to (1) evaluate the relationship between frequency of use and GPA, (2) assess the impact on achievement of use for different purposes (brainstorming, editing, and content generation), and (3) examine students' ethical perceptions of AI in the educational context. The urgency is driven by the unprecedented pace of AI integration in Indonesian higher education. In the absence of factual data, universities will lack a roadmap for its responsible implementation. The study aims to extend the discourse on AI and learning in the region theoretically, document evidence for empirical research in a Southeast Asian context, contribute methodologically by employing correlation, and provide practical data for universities on policy formulation.

Method

This study utilizes a quantitative approach to gain a fuller view of how AI-powered learning tools affect students' academic achievement at a private university located in East Jakarta. A quantitative correlational approach based on a cross-sectional survey was designed to explore the relationship between students' academic achievement and the varying patterns of AI-powered learning tool usage within the context of the English education curriculum. The framework was appropriate for the research aim as it facilitated the assessment of the variables and the relationship analysis without any research manipulation (Creswell & Creswell, 2018).

The study was conducted at Universitas Muhammadiyah Prof. DR. HAMKA (UHAMKA), East Jakarta. The sample consisted of 32 purposively sampled fifth-semester students registered in the English Education Program. The inclusion criteria for students were active membership, fifth-semester, and AI-powered learning tools. The net sample was 32 respondents (80% response rate). The sample was dominant by the female (81.3%) population, aged 19- 20 (62.5%).

Ethical protections were taken with care since institutional approval was not obliged, yet the study followed the primary research ethical principles. Digital informed consent was requested on the first page of the online survey, detailing the study's aim, that participation was voluntary, and that responses would remain confidential. No identifying information which could compromise confidentiality was collected and emails were only used to validate responses and were anonymized prior to analysis. Data was kept on a device which only the researcher could access and was password protected.

The main source of data was a self-administered online survey created on Google Forms. The survey was adapted from a validated tool used by Ward et al. (2024), whose previous use in analogous research contexts confirmed its validity. The tool was tailored to fit the context better in terms of reliability, with specific questions added pertaining to the local students and the focus of the study. The survey was divided into three parts: (A) Demographics and self-reported cumulative GPA, (B) patterns of AI tool use (type, frequency, purpose, and study time percentage), and (C) the influence on Perceived Impact and Academic Integrity which used a combination of Likert-scale and open-ended questions. The survey was piloted to a small group of people to test clarity and face validity.

Data was collected in one week, with the survey link shared through official class communication routes. All respondents completed the survey anonymously on the platform. Quantitative data from closed-ended questions was exported to JASP (Version 0.19.30) for statistical analysis. The qualitative data from the open-ended questions was used for thematic analysis. Data analysis incorporated both descriptive and inferential statistics and was conducted using JASP software. First, to summarize students' GPAs and AI usage frequencies, descriptive statistics, which included the means and standard deviations, was produced. To respond to the primary research question, however, a simple linear regression analysis was performed. This analysis examined the extent to which the frequency of AI tool use (independent variable) predicted the value of academic achievement (GPA, the dependent variable). The significance level for the analysis was determined to be $\alpha = .05$. The primary descriptive assumptions of linear regression, including the normality of the residuals, were verified to substantiate the model. Qualitative responses to the open-ended questions were reserved for supplementary thematic analysis intended to provide contextual background for the statistical results.

Findings and Discussion

This part looks into the survey results and the statistical evaluations concerning the use of AI-powered learning tools and the associated academic performance of students.

1. Respondent Demographics and self-reported cumulative GPA

As mentioned in the survey conducted through Google Forms, the sampled population comprised 40 students in the fifth semester of the English Education Program at FKIP UHAMKA. Results were obtained from 32 participants, yielding an 80% response rate. The majority of respondents were female (81.3%) and within the 19–20 age bracket (62.5%). These findings align with the expected population structure of the English Education programs in Indonesia. Participants had notably sustained high academic performance, with GPAs averaging at 3.63 (SD = 0.19). The GPA figures were notably skewed as 68.8% of the respondents achieved GPAs in the 3.5–3.7 range, while 21.9% were within the 3.8–4.0 range. This suggests a high concentration of respondents, as 90.7% were within the 3.5–4.0 range, indicative of a reduced variation in performance, which suggests a ceiling effect with the GPAs providing weak correlations with the other variables.

This data on academic profile situates the study on Indonesian higher education in its broader context. Pre-AI tool implementation, students in the sample study were already high- achieving, positioning students as a mechanism for performance maintenance rather than performance enhancement. This aligns with the findings of García-Martínez et al. (2023) on the relevance of contextual conditions on the educational effects of technology.

2. AI Tool Usage and Patterns

The survey results revealed near-universal adoption of AI-powered learning tools among participants. All 32 students reported using at least one AI tool for academic purposes, indicating that AI engagement is not peripheral but a normalized practice within this cohort.

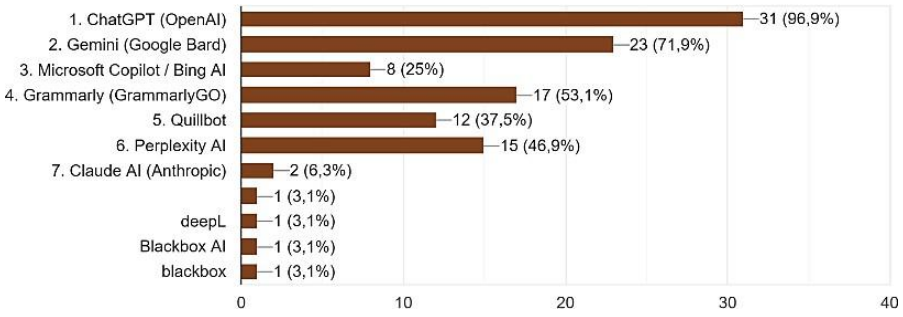

Figure 1. Which of the following AI-powered learning tools have you used for your academic purposes?

[Source: Data Primary 2025]

Figure 1 depicts the different levels of tool adoption. ChatGPT had the highest usage at 96.9%,

followed by Gemini/Google Bard at 71.9%, Grammarly at 53.1%, Perplexity at 46.9%, Quillbot at 37.5%, and Microsoft Copilot/Bing at 25%. The prevalence of conversational models (ChatGPT, Gemini) and tools that assist writing indicates that most students use AI primarily for learning and writing aid, as opposed to more sophisticated applications. Such variations in adoption also indicate that the frequency of use alone is not indicative of the depth of engagement, especially in teaching value, in use of AI.

In relation to tool use, **Figure 2** illustrates that students frequently interacted with AI. The mean frequency score of 4.25 (SD 2.33) on a 7-point scale, was between "once a week" and "several times a week." In addition, 37.5% of students reported that AI constituted 51–75% of their total study time, while a large number reported use within the 26–50% range. This indicates that AI is a significant and integrated part of students' study practices.

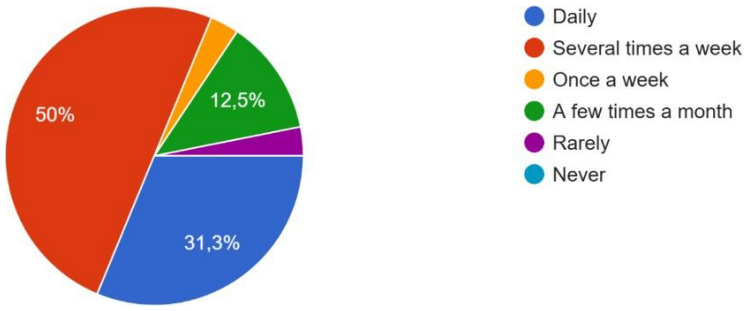

Figure 2.How frequently do you use AI-powered tools for your academic work?

[Source: Data Primary 2025]

In addition to usage frequency, the analysis in terms of purpose has shown that students purposefully incorporate AI across different stages of academic work:

1) Ideation and planning: brainstorming (71.0%) and outlining essays or papers (45.2%).

2) Information synthesis: researching and summarizing (48.4%).

3) Writing and refinement: paraphrasing or rewriting (48.4%), grammar and/or spelling (54.8%) and overall text.

This staged usage indicates that students do not fully offload the cognitive work. They appear to prefer AI for stimulating creativity (e.g., brainstorming) and for more overt mechanical assistance (e.g., grammar checking). Such findings align with Erizara and Wijirahayu (2024) on language learning tools, in that students are more systematic in their use of tools and that this use, as aligned with their learning objectives in the disciplines, is integrated as part of the technology layer.

3. Relationship Between AI Usage and GPA

In determining the association between AI usage frequency and academic performance, a simple linear regression was conducted. Analysis showed the model accounted for less than 1% of the GPA variance ($R^2 = .009$, Adjusted $R^2 = –.024$). **In Table 1**, the regression coefficient is weak and non-significant ($\beta = –0.097$), revealing the absence of a meaningful connection between academic performance and the frequency of AI tool usage.

Table 1. Linear Regression Predicting GPA from AI Usage Frequency **Model**	**R**	**R^2**	**Adjusted R^2**	**RMSE**	**Source**	**Sum of Squares**	**df**	**Mean Square**	**F**	**p**
M_0	0.000	0.000	0.000	0.192	–	–	–	–	–	–
M_1	0.097	0.009	-0.024	0.194	Regression	0.011	1	0.011	0.288	0.596
					Residual	1.134	30	0.038		
					Total	1.145	31	–		

Note. M_1 includes *How frequently do you use AI-powered tools for your academic work?*

The ANOVA results demonstrated the absence of statistical significance of the regression model, $F(1, 30) = 0.288$, $p = .596$. Thus, the variance in AI usage frequency explained no difference in GPA for this cohort. This lack of correlation also contradicts simple narratives regarding the impact of AI on academic performance. This is likely due to a ceiling effect in the demographic profile, as students performed predominately at a level whereby AI operates as an tool of efficiency to maintain performance rather than improve it. This supports the caution of Jihan et al. (2025) regarding over-reliance on AI and the significance of contextual and qualitative usage as a more relevant mediator than frequency, especially in high-achieving academic settings.

4. Perceived Impact and Academic Integrity

While the quantitative analysis has not established a direct link between AI usage and GPA performance, students' perceptions and ethical considerations concerning AI are crucial to contextualize these findings. Lengthy descriptive statistics have been added to the report in order to balance the AI-powered learning tools score analysis. **In Table 2**, positive perceptions toward the usefulness and effectiveness of AI and mild ethical concerns are suggested by the students.

Table 2: Descriptive Statistics of Student Perceptions on AI-Powered Learning Tools (N=32)

Statements	Valid	Mean	Std. Deviation
I believe AI should be used only as a learning aid, not to complete assignments for me	32	3.469	0.983
Using AI tools has improved my understanding of course materials	32	3.656	1.035
AI tools help me complete my assignments more efficiently.	32	3.625	1.100

Statements	Valid	Mean	Std. Deviation
I am concerned about the ethical implications of using AI for academic work.	32	3.344	0.971
I feel confident in my ability to use AI tools effectively for learning.	32	3.625	0.942
I am aware of my university's policy on academic integrity regarding AI use.	32	3.344	0.971
I feel comfortable using AI technology.	32	3.469	1.016
AI tools have had a positive impact on my motivation to learn.	32	3.531	0.915

Note: Based on a 5-point Likert scale where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

With moderate agreement, students attested to AI tools aiding in the comprehension of course materials (M = 3.66, SD = 1.04) and efficiency in finishing assignments (M = 3.63, SD = 1.10). Almost evenly, students, and to a moderate extent, emphasized that AI, as a learning tool, should assist them, not accomplish the work.

For the students, in **Figure 3**, the most common response (40.6%) to the stated benefits was "Helps me understand difficult concepts by explaining them in different ways (personalized tutoring)." Other, less common benefits noted were "Saves time and increases efficiency" (18.8%) and "Increases my accessibility to information and learning resources" (18.8%).

Figure 3. what is the biggest BENEFIT of using AI tools for your studies?

[Source: Data Primary 2025]

When asked about risks, students' responses (see **Figure 4**) centered on reliability and integrity. The most frequently cited concern was inaccurate or biased information (34.4%), followed by plagiarism and academic dishonesty (28.1%). These results suggest that students value AI's support but remain cautious about its ethical and academic implications.

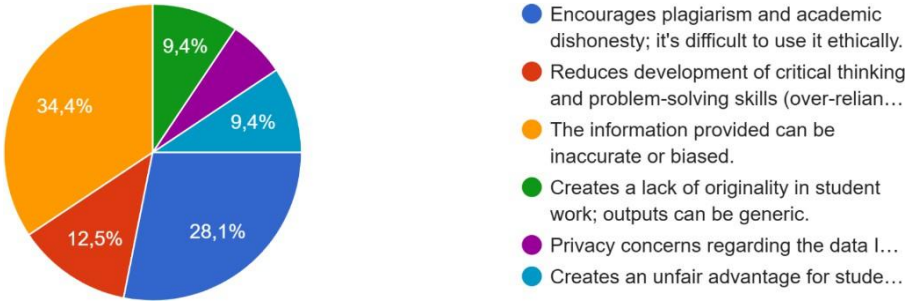

Figure 4. What is the biggest Risk or Challange associated with using AI tools for academic work?
[Source: Data Primary 2025]

The presence of positive utility perceptions alongside ongoing ethical concerns illustrates a technology integration gap. Students' lack of knowledge about institutional policies and their reliance on personal judgment indicate that ethics are predominantly self-guided rather than externally constructed. This perspective resonates with Shalevska and Kostadinovska-Stojchevska's (2024) views on an underprepared education system and strengthens Fauziddin et al.'s (2025) focus on the need for more robust policy frameworks in Indonesia. In addition, the difference between benefits perceived and GPA outcomes points toward AI's value being more in process efficiency and supporting learning rather than in driving academic achievement.

5. Thematic Insights from Open-Ended Responses

To enhance the analysis of the data, the surveys included open-ended questions about what features students wanted AI educational tools to include and their experiences using AI for their studies. Thematic analysis noted two central themes: learning experiences and desired features.

a) Desired features: a considerable number of students mentioned the need for immediate and interactive feedback, particularly for learning languages, (e.g., "AI tools that can give real-time feedback on my pronunciation"). Others spoke about the need AI tools to personalize and adapt learning pathways along with more precise and detailed AI responses.

b) Learning experiences: Respondents largely considered AI beneficial regarding efficiency and understanding aids (AI assists me in breaking down my problems and aids me in learning), often employing it to brainstorm and understand concepts. At the same time, several concerns regarding over-dependence and academic honesty were expressed, describing instances where AI offered elaborate generic responses or duplicated outcomes for several users and thereby suggesting cheating.

Overall, students acknowledge the appreciation of AI during practical learning, but offered caution regarding the perceived cognitive and ethical consequences. To illustrate more clearly, Table 3 outlines the illustrative responses for each of the summarised categories.

Table 3. Thematic analysis of open-ended responses

Theme	Representative Responses
Real-time & interactive feedback	"AI tools that can give real-time feedback on my pronunciation."
Personalization	"AI should create customized learning plans based on my improvement."
Accuracy & depth	"The feature I hope to see in AI is greater accuracy in its answers."
Positive experience	"AI helps me reduce my problems and find my way to learn."
Critical concern	"Sometimes I only find the answer and don't try to understand why it's right or wrong."

Conclusion

In sum, these findings suggest the AI trends among students of English education are universal and integrated across a variety of learning stages. While the frequency of AI use does not significantly correlate to GPA, students suggest it offers notable improvements to learning efficiency and motivation alongside cognitive concerns. This contrasts other international literature which views AI primarily as a performance booster. It would suggest that AI integration in higher education ought to be framed within a pedagogical approach that balances the acceptance of AI innovations and the academic rigour expected, such that the use of AI increases.

Implications, Limitations, and Future Research

On a theoretical level, these findings add to the literature that the mere frequency of technology use cannot determine achievement and strengthens the case for the Technology Acceptance Model that focuses on perceptions and contextual integration. From a practical standpoint, universities need to:

- Create policies that ensure a balanced use of AI with considerations of academic integrity.
- Construct assignments that require the reflective and critical use of AI.
- Teach the effective and ethical use of AI.

As for the limitations, these findings are based on a small sample size and a self-reported, limited range of GPAs. Future studies should take a longitudinal approach, include a wider diversity of participants, and include variables such as critical thinking and creativity in addition to GPA. In this regard, qualitative approaches, such as interviews and classroom observations, would provide a rich perspective on student engagement with AI.

References

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Erizara, B. V., & Wijirahayu, S. (2024). The Exploration of Duolingo Application for Vocabulary Building and Pronunciation of Pre-Service Teachers. Scripta: English Department Journal, 11(1), 95-105.

Fauziddin, M., Adha, T. R., Arifiyanti, N., Indriyani, F., Rizki, L. M., Wulandary, V., & Reddy, V. S. V. (2025). The Impact of AI on the Future of Education in Indonesia. *Educative: Jurnal Ilmiah Pendidikan*, *3*(1), 11–16.

García-Martínez, I., Fernández-Batanero, J. M., Fernández-Cerero, J., & León, S. P. (2023). Analysing the Impact of Artificial Intelligence and Computational Sciences on Student Performance: Systematic Review and Meta-analysis. *Journal of New Approaches in Educational Research*, *12*(1), 171–197.

Haris, Arsyanda, Muh. Ridha Darwis, M. Rahmat Wahyudi JY, & M. Ilham. (2024). Analisis Dampak Literasi AI terhadap Perubahan. *Jurnal Pendidikan Terapan*, *2*(1), 66–77.

Huang, Y. (2024). Current situation of students using AI tools to assist English learning: A case study of Guangdong University of Education. *Proceedings of ICILLP 2024 Workshop: Today's College Students and Faculty: How AI is Transforming Their Behaviors, Legally.*

Jaysone Christopher M. Bancoro. (2024). The Relationship Between Artificial Intelligence (AI) Usage and Academic Performance of Business Administration Students. International Journal of Asian Business and Management, 3(1), 27–48.

Jihan Alifa Firdaus, Rakhma Imamatul Ummah, Rahma Rizky Aprialini, Ainul Fithriyyah, Mahsusi, & Afif Faizin. (2025). Ketergantungan Penggunaan Kecerdasan Buatan (AI) pada Tugas Akademik Mahasiswa Terhadap Kemampuan Berpikir Kritis dan Kreatif. *Didaktika: Jurnal Kependidikan*, *14*(1).

Micabalo, A. D. C., Ofianga, A. M. M., Ormita, E. B. L., Orola, G. M. A., & Ong, J. D. S. G. (2024). *the Impact of Ai-Powered Study Tools on the Academic Performance and the Motivation of Higher Education Students*. *November*, 1–69.

Qureshi, R., Noreen, S., & Ismaeel, G. (2024). The Role of AI and ChatGPT in Enhancing Learning Achievement Among University Students: A Quantitative Analysis. *IRASD Journal of Educational Research*, *5*(1), 75–81.

Rojas, M. P., & Chiappe, A. (2024). Artificial Intelligence and Digital Ecosystems in Education: A Review. *Technology, Knowledge and Learning*, *29*(4), 2153–2170.

Shalevska, E., & Kostadinovska-Stojchevska, B. (2024). Ethics in Times of Advanced AI: Investigating Students' Attitudes Towards ChatGPT and Academic Integrity. Učitel/Teacher, 27, 72–78.

Vieriu, A. M., & Petrea, G. (2025). The Impact of Artificial Intelligence (AI) on Students' Academic Development. Education Sciences, 15(3), 343.

Ward, B., Bhati, D., Neha, F., & Guercio, A. (2024). Analyzing the impact of AI tools on student study habits and academic performance. In *Proceedings of the IEEE International Conference on Education and Technology (ICET 2024)*

Wijirahayu, S., Suheri, T., & Hartati, N. (2025). The Perception of Grammarly among Pre-Service Teachers in Scientific Writing Class. International Journal of Education and Sosiotechnology (IJES), 5(1), 15-24.