International Journal of Educational Practice and Policy
Year 2025, Vol. 3, No. 1, pp. 66-72
ISSN: 2988-6716, DOI: 10.61220/ijepp.v3i1.0264

Artificial Intelligence Use and Effects on Academic Task Quality and Efficiency: A Study in Higher Education

ARTICLE HISTORY
Received 22 May 2025
Accepted 25 June 2025
Published 30 June 2025

Nadia Febrian Sitanggang[1], Gita Magdalena Pasaribu[1], Grace Sihombing[1], Rahel Jesiska Pinem[1], Eka Yuli Yana[1], Cahaya Marsinta Sitinjak[1], & Rini Juliana Sipahutar[1]

[1]Faculty of Education, Universitas Negeri Medan, Indonesia

CORRESPONDING AUTHOR
Nadia Febrian Sitanggang
E-mail:
nadiafebrian.1223313001@mhs.unimed.ac.id
Post Address: Faculty of Education, Universitas Negeri Medan, Indonesia

Keywords
Artificial intelligence, academic task, higher education

How to cite: *Sitanggang, N. F., Sipahutar, R. J., Pasaribu G. M., Sihombing, G., Pinem, R. J., Sitinjak, C., M., Yana, E. Y. (2025). Artificial Intelligence Use and Its Effects on Academic Task Quality and Efficiency: A Study in Higher Education. International Journal of Educational Practice and Policy, 3(1), 66-72.*

ABSTRACT

This study explores the impact of artificial intelligence (AI) use on the quality and efficiency of academic tasks among students in higher education. The widespread integration of AI tools—such as ChatGPT, Perplexity, and other language models—has significantly influenced learning behaviors, information access, and task completion processes. The purpose of this study is to investigate how the use of AI technologies affects students' ability to produce academic tasks with higher quality and in a more time-efficient manner, while also identifying possible drawbacks such as overreliance. A mixed-method approach was employed, combining quantitative data collected through questionnaires with qualitative insights gained from interviews. A total of 80% of the surveyed students reported frequent use of AI tools in their academic work, with ChatGPT being the most preferred platform. Results indicate that 85% of students perceived a positive impact of AI on task quality, while 75% reported improved efficiency. The qualitative data supported these findings, highlighting enhanced understanding, faster idea generation, and reduced workload. However, concerns regarding dependence and ethical use were also raised. This study concludes that AI holds substantial potential to support academic performance, but its integration must be guided by responsible usage and critical awareness in educational contexts.

1. INTRODUCTION

In recent years, the advancement of artificial intelligence (AI) has brought significant changes across various domains, particularly in education. The increasing accessibility and usability of AI tools have led to their rapid adoption by students in higher education. Tools such as ChatGPT, Perplexity, and other AI-based platforms are now commonly used to support academic activities ranging from brainstorming ideas to generating drafts and refining written content (Lin, 2024). This phenomenon invites scholarly inquiry into how such tools influence the quality and efficiency of academic work. The use of AI in educational settings is often praised for its ability to enhance productivity, facilitate learning, and personalize the learning experience. AI technologies can assist students in understanding difficult concepts, organizing their thoughts more coherently, and completing assignments more efficiently (Erbas et al., 2024) (Fitria, 2021). These benefits suggest that AI may be a powerful supplement to traditional learning strategies, especially in an era where digital literacy is increasingly essential.

However, despite the perceived advantages, there are legitimate concerns regarding the implications of widespread AI use among students. Issues such as overreliance on technology, diminished critical thinking skills, academic dishonesty, and the risk of data privacy breaches are frequently raised by educators and researchers. These concerns underscore the need for a balanced understanding of AI's role in academic settings, particularly with respect to student learning outcomes. Existing literature has primarily focused on the technical development of AI tools and their applications in STEM education (Ouyang et al., 2022; Xu & Ouyang, 2022). However, less attention has been given to how students in non-technical faculties engage with AI to complete academic tasks. This gap in the literature presents an opportunity to explore how students in fields such as education, social sciences, and humanities utilize AI in their learning processes, and how it affects their academic performance.

Furthermore, many existing studies tend to generalize the impact of AI without considering contextual factors such as academic level, discipline, or institutional policies. These factors can shape students' perceptions, motivations, and patterns of AI use. A more nuanced approach is needed to understand how AI tools are perceived and adopted in specific educational environments, and what outcomes they produce in relation to students' academic development. To address this issue, the present study examines the use of AI and its perceived effects on academic task quality and efficiency among undergraduate students in a faculty of education. The study investigates how frequently students use AI, what types of AI tools they prefer, and how they perceive the tools' impact on their ability to complete academic assignments. The study also explores both the positive outcomes and the potential drawbacks of AI usage from the students' perspectives.

Accordingly, this study aims to investigate how undergraduate students within a faculty of education utilize AI tools in the completion of their academic tasks and how they perceive the impact of such tools on both the quality and efficiency of their work. By examining the specific types of AI technologies students engage with, the frequency and contexts of their use, and the outcomes they associate with these tools, this research seeks to uncover both the practical benefits and emerging concerns related to AI-assisted learning. In doing so, the study not only explores the extent to which AI supports higher-order cognitive processes—such as organizing arguments, clarifying complex ideas, and improving coherence—but also considers how students negotiate ethical boundaries, maintain academic integrity, and develop personal responsibility in an increasingly automated environment.

The dual focus on quality and efficiency reflects the need to understand academic performance beyond speed and output, emphasizing depth, clarity, and intellectual originality.

Furthermore, insights from this study are expected to support the development of institutional policies and pedagogical strategies that harness AI as a meaningful learning aid rather than a shortcut or replacement for critical thinking. By foregrounding students' lived experiences and nuanced perspectives, this research contributes to the broader discourse on digital transformation in education, highlighting the opportunities and challenges that arise as AI technologies become embedded within the practices and expectations of academic life.

2. METHODOLOGY

This study employed a mixed-methods approach that integrates both quantitative and qualitative research designs. The rationale for using this approach was to obtain a comprehensive understanding of how students use artificial intelligence (AI) tools and how this usage affects the quality and efficiency of their academic task performance. By combining numeric data from questionnaires with qualitative insights from interviews and observations, the research aims to triangulate findings and ensure both depth and breadth of analysis.

The participants of this study were undergraduate students enrolled in the Faculty of Education at a public university in Indonesia. The study was conducted on March-April 2025, and involved a purposive sample of students from various programs within the faculty. A total of six student researchers conducted the study, each contributing to the data collection, analysis, and interpretation processes. The research focused on students' use of AI technologies such as ChatGPT, Perplexity, and other similar tools in the context of completing academic assignments.

Quantitative data were collected using structured questionnaires distributed to student respondents. The questionnaire items were designed to measure the frequency of AI usage, the types of AI tools used, the level of comfort with AI, and students' perceptions regarding its impact on task quality and time efficiency. The questionnaire results were compiled and analyzed using descriptive statistics, including percentage frequencies to identify general patterns among the respondents. Qualitative data were gathered through semi-structured interviews and direct classroom observations. The interviews aimed to explore students' subjective experiences, including their motivations for using AI, challenges faced, and perceived ethical implications. Observations were conducted to validate self-reported behavior and to capture contextual factors related to students' engagement with AI technologies during the learning process. These qualitative methods enabled a more nuanced understanding of how AI tools are integrated into students' academic routines.

The integration of quantitative and qualitative findings was conducted through a convergent parallel design. The results from both data types were analyzed separately and then compared to identify areas of convergence and divergence. This methodological triangulation strengthens the credibility of the findings and provides a richer picture of the impact of AI use in higher education learning contexts. Overall, this research design was appropriate for exploring the multidimensional nature of AI adoption in academic settings, particularly its implications for learning quality and task efficiency.

3. RESULTS AND DISCUSSION

The quantitative findings from this study revealed a substantial level of engagement with artificial intelligence (AI) tools among undergraduate students. The following tables summarize the key patterns of AI usage and students' perceptions derived from the quantitative data.

Table 1. Frequency of AI Tool Usage among Students

No	Frequency Category	Percentage
1	Frequently	80%
2	Occasionally or Rarely	20%

As shown in Table 1, the majority of respondents (80%) reported frequent use of AI tools to complete their academic assignments. This high usage rate indicates the growing integration of AI into students' academic routines, suggesting its increasing role in supporting various learning tasks.

Table 2. Preferred AI Tools Used by Students

No	AI Tool Category	Percentage
1	ChatGPT	65%
2	Data processing tools (e.g., Excel AI)	15%
3	Document generators (e.g., Jasper AI)	10%
4	Others	10%

According to Table 2, ChatGPT was identified as the most frequently used AI platform, with 65% of students naming it as their primary tool. This dominance suggests that students favor AI applications that provide real-time, context-aware feedback and language assistance. In contrast, tools focused on data analysis or document automation were less commonly used, indicating that natural language processing (NLP) tools are perceived as more accessible and useful in educational contexts.

Table 3. Students' Comfort Level in Using AI Tools

No	Comfort Level	Percentage
1	Comfortable	75%
2	Neutral	15%
3	Uncomfortable	10%

As indicated in Table 3, a substantial proportion of students (75%) reported feeling comfortable or very comfortable using AI tools. This comfort was attributed to factors such as fast access to information, reduced writing anxiety, and enhanced clarity in academic writing. On the other hand, a small percentage (10%) expressed discomfort, often citing concerns related to tool reliability, data accuracy, and ethical consideration.

Table 4. Perceived Impact of AI on Academic Task Quality and Efficiency

No	Perception Category	Percentage
1	Positive	85%
2	Neutral	10%
3	Negative	5%

The data in Table 4 reveal that, most students (85%) perceived that the use of AI had a positive impact on both the quality and efficiency of their academic work. They noted that AI helped improve the structure, depth, and coherence of their writing while reducing the time needed for content development and information searching. This suggests that AI is not only

being used as a time-saving tool but also as a means of enhancing cognitive performance and academic outcomes.

The qualitative data, obtained through interviews and observations, provided additional depth to these findings. Students described AI as a “learning partner” that assists in clarifying difficult concepts, brainstorming ideas, and even identifying structural weaknesses in their writing. However, several students also noted a tendency to rely heavily on AI without fully understanding the content, highlighting a tension between assistance and dependency.

These results reinforce the growing role of AI in reshaping academic behaviors and learning strategies in higher education. The high frequency of AI usage, particularly of conversational agents like ChatGPT, supports the notion that students view AI not merely as a technological novelty but as a functional tool for academic problem-solving. The combination of ease of access, user-friendly interface, and responsive outputs contributes to AI's rapid adoption among learners seeking efficiency and academic enhancement. The students’ comfort with AI suggests that digital literacy and openness to emerging technologies are well-established among current higher education learners. This is in line with literature that characterizes Generation Z as “digital natives” who prefer interactive, on-demand learning technologies (Jayatissa, 2023). The positive perceived impact on academic quality and efficiency indicates that AI is facilitating not only logistical aspects of academic tasks (e.g., grammar checking, summarization), but also higher-order learning processes such as critical thinking, structuring arguments, and improving coherence.

However, the findings also highlight emerging risks associated with overreliance. The qualitative narratives reflect that while students appreciate AI’s guidance, they also recognize its limitations, especially in offering nuanced, discipline-specific insights or in tasks that require original thought and interpretation. These insights mirror global academic discussions that caution against passive learning behaviors, such as copying AI-generated content without evaluation (Darwin et al., 2024) (Çela et al., 2024). Another point of concern involves ethical considerations. Students who expressed discomfort often mentioned academic integrity and the blurred lines between assistance and academic dishonesty (Lund et al., 2025)(Ihekweazu et al., 2023). The lack of standardized institutional policies regarding AI usage exacerbates these concerns. Therefore, while AI presents numerous benefits, its integration into higher education must be supported by structured frameworks that promote responsible use, emphasize critical engagement, and safeguard academic authenticity.

Furthermore, the predominance of ChatGPT suggests that students favor AI tools that allow two-way interaction, immediate response, and adaptability to different types of academic tasks. This has implications for the development of educational technology: tools that simulate human-like feedback and support metacognitive processes are more likely to be adopted and retained in academic environments. In a broader educational context, this study emphasizes the transformative potential of AI in learning environments, particularly in developing countries where access to resources may be limited. AI can democratize access to information, support students with diverse learning needs, and optimize both teaching and administrative processes. Nevertheless, these advantages must be balanced with pedagogical guidance, curricular integration, and awareness of socio-technical challenges, including data privacy, bias in AI algorithms, and digital equity.

In conclusion, the integration of AI in higher education is not only inevitable but also increasingly essential. Its use offers clear benefits in enhancing academic productivity and learning quality. However, the success of AI in education depends largely on how it is used, for what purposes, and within what ethical boundaries. Institutions must take proactive steps in

formulating policies, fostering digital ethics, and ensuring that AI remains a tool for learning, not a substitute for thinking.

4. CONCLUSION

This study investigated the use of artificial intelligence (AI) and its effects on the quality and efficiency of academic task performance among students in higher education. The findings revealed a high prevalence of AI usage—particularly conversational tools such as ChatGPT—with students reporting improved efficiency, enhanced task quality, and increased comfort in academic engagement through AI. These results suggest that AI is becoming an integral element of students' academic routines, functioning not only as a support tool but as a key contributor to their learning processes.

However, the study also revealed concerns regarding overreliance, ethical ambiguity, and a lack of critical engagement with AI-generated outputs. These findings underscore the necessity for institutions to establish clear usage policies, provide structured training in digital literacy, and embed ethical considerations into academic curricula. Educators must balance the adoption of AI with pedagogical strategies that promote independent thinking, originality, and reflective learning.

Given the growing role of AI in education, future research should explore longitudinal impacts on students' cognitive development, examine disciplinary differences in AI adoption, and investigate institutional responses to AI integration. Additionally, further inquiry into how students distinguish between support and substitution when using AI can deepen our understanding of its pedagogical role.

Although this study provides important insights, it was limited by its reliance on self-reported data and a single-institution sample. Future studies should aim for broader demographic coverage and incorporate objective performance metrics to validate perceived outcomes. Despite these limitations, the findings contribute meaningfully to the discourse on AI in education, offering both theoretical insights and practical recommendations for navigating the evolving digital learning landscape.

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