

HUMAN-AI COLLABORATION IN ACADEMIC WRITING: INDONESIAN EFL STUDENTS' PERSPECTIVES ON AI-ASSISTED WRITING

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ABSTRACT

The increasing use of artificial intelligence (AI) tools in higher education has changed how students plan, draft, revise, and evaluate academic texts. However, limited research has examined Indonesian EFL undergraduate students' perspectives on AI adoption in research paper writing. This study investigates students' perceptions of AI integration in academic writing within the Indonesian EFL context. Employing a case study design, the study involved 77 students from an English Education program at a private university in Jakarta, Indonesia. Data were collected through questionnaires and semi-structured interviews and analysed using descriptive statistics and thematic analysis. The findings indicate that students were highly familiar with AI tools ($M = 3.92$) and primarily employed them for plagiarism checking ($M = 3.95$) and sentence recommendations (72.7%). Students also perceived AI as beneficial for improving vocabulary and writing quality ($M = 3.90$). However, 54.5% of participants expressed concerns that excessive AI reliance could reduce critical thinking skills. The study highlights the importance of integrating AI critically and responsibly in academic writing instruction to support ethical and effective learning practices in higher education.

ARTICLE INFO

Article History:

Received: 25 February 2026

1st revision: 24 April 2026

2nd revision: 28 May 2026

Accepted: 9 June 2026

Published: 30 June 2026

Keywords:

Academic writing;

Artificial intelligence;

EFL;

Undergraduate students;

How to cite: Febriyanti, R. H., Sundari, H., Baron, R., Arfani, S., & Rahman, A. (2026). Human-AI Collaboration in Academic Writing: Indonesian EFL Students' Perspectives on AI-Assisted Writing. *Jo-ELT (Journal of English Language Teaching) Fakultas Pendidikan Bahasa & Seni Prodi Pendidikan Bahasa Inggris IKIP*, 13(1), 135–152. <https://doi.org/10.33394/jo-elt.v13i1.19807>

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INTRODUCTION

Academic writing is a cognitively demanding process that requires learners to integrate linguistic competence, critical thinking, disciplinary knowledge, and rhetorical awareness to produce coherent and academically acceptable texts (Flower & Hayes, 1981; Kim et al., 2024). These demands are particularly challenging for English as a Foreign Language (EFL) learners, who frequently encounter difficulties related to language proficiency, academic vocabulary,

argument development, and textual organisation (Doolan, 2019). In higher education, such challenges become more evident in research paper writing, which requires students to synthesise sources, construct evidence-based arguments, and adhere to academic conventions (Hyland, 2021; Swales & Feak, 2012). At the same time, instructors often face limitations in providing extensive individualised feedback on students' writing due to time constraints and large class sizes (Guo et al., 2021). Consequently, EFL learners increasingly require additional forms of support to assist their academic writing development.

The rapid expansion of Artificial Intelligence (AI) technologies has transformed the landscape of language learning and academic writing. AI-powered tools, including grammar checkers, paraphrasing systems, automated feedback platforms, and generative AI applications, are increasingly integrated into EFL learning environments (Fui-Hoon Nah et al., 2023; Tran & Nguyen, 2025; Triana et al., 2025). Previous studies have demonstrated that AI can support writing accuracy, revision processes, self-regulation, and writing efficiency while reducing cognitive demands during composition (Almanea, 2024; Gayed et al., 2022; Henderson et al., 2025; Malik et al., 2023; Taskiran & Goksel, 2022). AI has also been associated with improvements in idea generation, language development, and scientific literacy in academic writing contexts (Kim & Kim, 2022). These studies indicate that AI may support EFL writers in handling specific writing demands, particularly language correction, revision, and idea organisation.

Despite these advantages, the increasing integration of AI into academic writing has also generated substantial pedagogical and ethical concerns. Existing literature has highlighted issues related to plagiarism, misinformation, academic integrity, overreliance on technology, and declining critical engagement among students (Aladsani, 2025; Gonsalves, 2024; Luo, 2024; O'Dea, 2024; Wise et al., 2024). AI-generated outputs may also lack contextual sensitivity, disciplinary precision, and interpretive depth, raising concerns regarding the originality and reliability of academic work (Alghasab, 2025; Werdiningsih et al., 2024). These tensions indicate that AI integration in academic writing should not be viewed solely as a matter of technological efficiency, but also as an issue involving learner autonomy, critical judgment, and ethical responsibility.

From a sociocultural perspective, writing development is shaped through scaffolding and guided support. Vygotsky's Zone of Proximal Development (ZPD) emphasises that learners can accomplish more complex tasks with assistance from instructors, peers, feedback, or learning tools (Chen, 2021; Xi & Lantolf, 2021). Empirical studies have shown that digital technologies, collaborative activities, and automated feedback systems can enhance learners' self-regulation, confidence, and writing performance (Abdelaziz & Zehmi, 2020; Guo et al., 2021; Saadati et al., 2021). Within this framework, AI may function as a contingent scaffold that supports lower-level writing demands while enabling learners to focus on higher-order thinking processes. However, the effectiveness of such support depends on how learners critically engage with AI-generated suggestions rather than uncritically rely on them.

Although previous studies have examined AI-assisted writing in EFL contexts, most have primarily focused on general writing improvement, grammar correction, or attitudes toward AI tools. Limited research has specifically examined how Indonesian EFL undergraduate students perceive the use of AI in research paper writing. This context is important because Indonesian undergraduate students frequently encounter difficulties in producing academically rigorous research papers in English while simultaneously experiencing increasing exposure to generative AI technologies in higher education settings.

Therefore, investigating Indonesian EFL students' perspectives on AI-assisted research paper writing is necessary to better understand how learners negotiate the benefits and limitations of AI in academic contexts. This investigation is expected to clarify how Indonesian EFL undergraduates use AI when preparing research papers and how they judge its usefulness,

risks, and boundaries in academic writing. Additionally, the study contributes to ongoing discussions regarding responsible AI integration in EFL academic writing instruction, particularly in developing contexts where research on human–AI collaboration in academic writing remains limited. Accordingly, this study aims to examine Indonesian EFL undergraduate students’ perspectives on AI adoption in Academic Writing courses, specifically in crafting research papers.

RESEARCH METHOD

Research Design

This study applied a case-study approach within a quantitative and qualitative paradigm. A case study investigates a contemporary phenomenon within its real-world context, particularly when the boundaries between the phenomenon and its context are not clearly defined, and it may apply both quantitative and qualitative approaches through specific design and data collection strategies such as triangulation, whether involving single or multiple cases and serving evaluative purposes (Yin, 2014). This research warrants a case study approach because students’ perspectives on AI as an assistive tool in academic writing are context-dependent and shaped by situated academic practices, individual experiences, and institutional norms, thereby requiring an in-depth, holistic examination within a bounded real-life educational setting.

Participants

The participants in the current research were a cohort of 77 undergraduate students from a private university in Jakarta, Indonesia, who enrolled in the Academic Writing course and completed the questionnaire, and 8 participants who volunteered for the interview section. The sampling in the current study employed convenience sampling because it enabled the researcher to obtain data from readily accessible participants who met the research criteria, while also accommodating the study’s time and resource constraints. Participation was voluntary; only those willing to be involved were included; those who declined were not compelled to participate. The following is the demographic data for the participants:

Table 1
The participants’ demographic data

No.	Items	Category	Quantity	Percent
1.	Age	17–20 years old	7	9.1
		21–25 years old	60	77.9
		26–30 years old	7	9.1
		>31 years old	3	3.9
2.	Gender	Female	65	84.4
		Male	12	15.6
Total			77	100

Instruments

The research instruments employed in this study were a questionnaire and semi-structured interviews. The questionnaire, adapted from Malik et al. (2023), was modified to align with the course objective of producing a research paper in the Academic Writing course. It consisted of 40 Likert-scale items covering four dimensions: students’ knowledge of AI in academic writing, frequency and extent of AI utilisation, perceived impacts of AI, and students’ views on future human–AI collaboration. Since the instrument was adapted from a previously published study, a separate pilot test was not conducted. However, the adapted items were reviewed by the research team to ensure their relevance to the research objectives and course context. The internal consistency of the adapted questionnaire items was examined, and the

reliability analysis yielded a Cronbach's Alpha coefficient of 0.980 for the overall instrument, indicating very high internal consistency. The reliability coefficients for the four dimensions were also high: knowledge of AI in academic writing ($\alpha = 0.919$), frequency and extent of AI utilisation ($\alpha = 0.936$), perceived impacts of AI ($\alpha = 0.956$), and students' views on future human-AI collaboration ($\alpha = 0.949$).

To support data triangulation and deepen insights into students' perspectives, semi-structured interviews were conducted with eight participants, selected from the questionnaire respondents. The interview protocol was adapted from Kim et al. (2024) focused on students' experiences, perceptions, and ethical considerations regarding AI use in research paper writing. The interviews were conducted via WhatsApp over two to three days based on participants' availability. The interview data were analysed thematically. All participants provided informed consent and participated voluntarily using pseudonyms to maintain confidentiality.

Data Analysis

The data were analysed in two phases. The questionnaire data were analysed quantitatively using descriptive statistics in Microsoft Excel, including frequency distributions, mean scores, standard deviations, and Cronbach's Alpha reliability analysis. Microsoft Excel was employed due to its effectiveness in managing, tabulating, and systematically analysing descriptive survey data in small to medium-scale educational research fields (Dashkina et al., 2022; Pham & Bui, 2021). The mean scores were interpreted using Likert-scale categories to identify the levels of students' perceptions and AI utilisation patterns. Meanwhile, the interview data were analysed thematically following the framework proposed by Boyatzis (1998). The interview transcripts were first transcribed and coded using open coding to identify meaningful units of data. The resulting codes were then compared, categorised, and grouped into broader themes based on conceptual similarities, using an iterative inductive process. To enhance the trustworthiness of the qualitative analysis, the identified themes were peer-reviewed to ensure coding consistency and thematic accuracy. The integration of quantitative and qualitative findings also supported data triangulation and strengthened the credibility of the study findings.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

In the current section, results related to the research aims, which are to investigate Indonesian EFL undergraduate students' perspectives on adopting AI in the Academic Writing course, specifically in crafting a research paper, are presented in seven subheadings on deploying the questionnaire and five major thematic findings from the interview results.

Questionnaire Results

1. Knowledge of AI in Academic Writing in Crafting a Research Paper

The descriptive statistics regarding participants' knowledge of AI in Academic Writing for crafting a research paper are presented in Table 2.

Table 2
Knowledge of AI in academic writing in crafting a research paper

No.	Items	SD	D	N	A	SA	Mean	Std. Dev
1.	I am aware that AI-powered writing tools for crafting a research paper in Academic Writing exist.	3	5	11	34	24	3.92	1.04
2.	In my research paper writing, I employed AI-powered grammar and spelling checkers.	5	4	11	38	19	3.81	1.08
3.	I am familiar with AI-based plagiarism detection techniques that I may use to ensure the originality of my academic work.	3	4	14	33	23	3.90	1.02

4.	I have utilized AI methods for content summaries to comprehend challenging research publications.	0	7	25	29	16	3.70	0.90
5.	I am familiar with AI-generated citation and reference tools that I use to prepare my academic work.	1	9	18	32	17	3.71	0.98
6.	I have utilized AI-driven language translation technologies to access academic information that is written in the non-native language.	0	6	26	32	13	3.68	0.85
7.	I'm aware of AI writing helpers that provide context-specific word and phrase suggestions to improve my research paper composition.	0	5	21	34	17	3.82	0.85
8.	I have utilized AI-generated research paper outlines to efficiently arrange my ideas before writing.	4	8	16	33	16	3.64	1.09
9.	I am aware of AI-powered services that recommend research topics and sources for research paper preparation.	0	13	11	39	14	3.70	0.96
10.	I am confident in my knowledge of AI-powered writing tools for my research paper composition.	1	8	31	26	11	3.49	0.91

Table 2 illustrates that the participants had a relatively high level of awareness of AI integration in academic writing and in the composition of research papers. The highest mean scores were found for students' awareness of AI-powered writing tools ($M = 3.92$) and familiarity with AI-based plagiarism-detection tools ($M = 3.90$), indicating that AI was primarily recognised as a support mechanism for language accuracy and academic integrity. High mean scores were also described for the use of grammar and spelling checkers ($M = 3.81$) and AI-assisted contextual writing suggestions ($M = 3.82$), suggesting that students were familiar with AI applications that facilitate linguistic improvement during the writing process. In contrast, lower mean scores were observed in students' confidence in their overall knowledge of AI-powered writing tools ($M = 3.49$) and in their use of AI-generated outlines for organising research papers ($M = 3.64$). These findings imply that although students were generally aware of various AI functionalities, their confidence in strategically integrating AI into academic writing remained comparatively moderate. Overall, the results indicate that Indonesian EFL undergraduate students primarily associated AI with practical and language-related support rather than with more advanced academic writing functions.

2. The Frequency and Extent to which Students Utilise Artificial Intelligence

The descriptive statistics regarding the frequency and extent to which students use AI in Academic Writing when crafting a research paper are presented in Table 3.

Table 3
The frequency and extent to which students utilise artificial intelligence

No.	Items	SD	D	N	A	SA	Mean	Std. Dev
1.	I examine and enhance my works using AI-powered grammar and spelling checkers.	0	5	15	41	16	3.88	0.81
2.	I utilize AI-based plagiarism detection technologies to ensure the originality of my academic writing.	1	3	18	32	23	3.95	0.90
3.	AI-generated content summaries assist me in understanding difficult research articles for inclusion in my writings.	1	4	24	35	13	3.71	0.86

4.	AI technologies assist me generate citations and references in a variety of formats automatically.	2	5	25	34	11	3.61	0.91
5.	I utilize language translation AI to access academic literature that is written in the non-native language.	1	7	23	32	14	3.66	0.93
6.	AI-powered writing platforms provide context-specific word and phrase suggestions to help me improve my research paper composition.	0	4	20	39	14	3.82	0.79
7.	AI-powered systems suggest research subjects and suitable sources to help me prepare my research paper composition.	1	8	21	36	11	3.62	0.90
8.	Artificial Intelligence (AI) tools assist me in tailoring the style and tone of my research paper composition to certain academic criteria.	1	4	29	30	13	3.65	0.87
9.	I utilize AI-generated research paper outlines to successfully arrange my ideas before writing.	2	5	20	37	13	3.70	0.92
10.	AI-powered time management tools assist me in keeping track of my research paper composition work and meeting deadlines with my group team.	1	6	21	34	15	3.73	0.91

Table 3 demonstrates that participants frequently utilised AI tools to support the technical and linguistic aspects of research paper writing. The highest mean scores were displayed for AI-based plagiarism detection tools ($M = 3.95$) and grammar and spelling checkers ($M = 3.88$), indicating that AI was primarily used to improve language accuracy and maintain academic standards. Relatively high use was also identified in AI-assisted contextual writing suggestions ($M = 3.82$), suggesting that students relied on AI to refine sentence construction and enhance writing clarity. Meanwhile, comparatively lower mean scores were observed in the use of AI for citation generation ($M = 3.61$), source recommendation ($M = 3.62$), and academic style adjustment ($M = 3.65$). These findings imply that students tended to engage with AI more extensively for surface-level writing support than for complex academic writing processes that require deeper analytical and disciplinary understanding. Collectively, the results suggest that AI adoption among Indonesian EFL undergraduate students was predominantly associated with improvements in writing efficiency and linguistic accuracy during the composition of research papers.

3. The Impact of AI in Academic Writing in Crafting a Research Paper

The descriptive statistics regarding the impacts of AI in Academic Writing in crafting a research paper are presented in Table 4.

Table 4
The impact of AI in academic writing in crafting a research paper

No.	Items	SD	D	N	A	SA	Mean	Std. Dev
1.	Utilizing AI technologies in my research paper composition has enhanced my general writing ability.	0	4	23	39	11	3.74	0.77
2.	AI-powered grammar and spelling checks have assisted me in identifying and correcting writing errors, which has contributed to my writing ability growth.	1	4	17	36	19	3.88	0.89

3.	AI-based plagiarism detection systems have raised my understanding of academic integrity and the value of uniqueness in writing.	1	3	21	34	18	3.84	0.87
4.	AI-generated content summarizing has improved my capacity to extract essential ideas from difficult research articles, which has improved my writing comprehension.	0	3	24	34	16	3.82	0.81
5.	Using AI writing aids has increased the clarity and coherence of my works, favourably improving my writing style.	0	4	26	35	12	3.71	0.79
6.	AI-generated research paper outlines have helped me arrange my ideas more efficiently and enhance the organization of my work.	0	6	21	38	12	3.73	0.82
7.	The use of AI tools in my research paper composition has forced me to critically assess and critique my work, which has resulted in increased self-editing abilities.	0	5	20	39	13	3.78	0.80
8.	Artificial intelligence-based language translation technologies have introduced me to a wide range of academic information, extending my viewpoint and writing repertoire.	2	3	17	38	17	3.84	0.90
9.	AI technologies that provide context-specific word and phrase choices have helped me broaden my vocabulary and enhance the quality of my writing.	1	4	14	41	17	3.90	0.85
10.	I feel that employing AI technologies has improved my writing abilities and greatly impacted my academic writing in crafting a research paper.	1	4	24	31	17	3.77	0.90

Table 4 indicates that participants perceived AI as beneficial for academic writing development. The highest mean score was found in contextual word and phrase suggestions for vocabulary and writing quality improvement ($M = 3.90$), followed by grammar and spelling support ($M = 3.88$), reflecting a primary emphasis on linguistic accuracy and lexical enhancement. Moderately high scores were also reported for plagiarism detection ($M = 3.84$) and translation tools ($M = 3.84$), suggesting that AI supported both academic integrity awareness and access to broader academic resources. Lower scores were identified for writing clarity and coherence ($M = 3.71$) and idea organisation through AI-generated outlines ($M = 3.73$), indicating comparatively weaker perceived influence on higher-order writing processes. AI was predominantly perceived as a tool for improving linguistic accuracy and writing efficiency, with a lesser perceived contribution to rhetorical development and organisational competence in research paper writing.

4. Students' Views on How AI Collaborates with Human Writers in the Future

The descriptive statistics regarding the students' views on how AI will collaborate with human writers in the future are presented in Table 5.

Table 5
Students' views on how AI collaborates with human writers in the future

No.	Items	SD	D	N	A	SA	Mean	Std. Dev
1.	I contend that AI should be employed as a writing helper to assist human authors during the research paper writing process.	2	3	24	32	16	3.74	0.92
2.	AI should be utilized to discover probable grammatical and spelling problems, with human	1	6	17	36	17	3.81	0.92

	authors as the final decision maker on its revision.							
3.	I like AI to supply content recommendations and ideas, while human authors keep creative control over the research paper's direction and reasoning.	2	2	23	28	22	3.86	0.96
4.	AI should assist human authors by suggesting research topics and suitable sources, but human writers should still undertake critical analysis and synthesis.	2	2	21	33	19	3.84	0.92
5.	I contend that AI-generated outlines can be useful, but human authors should be free to adapt and expand on them to fit their writing style.	0	5	17	34	21	3.92	0.87
6.	Artificial intelligence (AI) should be employed for content summarizing and synthesis, supporting human authors in reducing complicated material into brief and comprehensible paragraphs.	0	9	15	37	16	3.78	0.91
7.	I involve artificial intelligence to assist in correct citation and referencing, but human authors must guarantee the authenticity and appropriateness of the sources mentioned.	2	3	21	30	21	3.84	0.96
8.	While AI may assist with language translation, human authors should verify the translated content to guarantee context and correctness.	2	4	14	38	19	3.88	0.93
9.	AI should be utilized to discover possible areas for improvement during the editing process, while human authors give the final tweaks and improvements.	0	7	16	38	16	3.82	0.87
10.	I believe that AI and human authors can work simultaneously and efficiently as well in keeping human originality and critical thinking in crafting a research paper composition.	0	6	17	38	16	3.83	0.85

Table 5 visualises that participants generally held positive views on human–AI collaboration in future academic writing. The highest mean score was found in the flexible use of AI-generated outlines under human control ($M = 3.92$), indicating strong support for maintaining human authorship in structuring research papers. High agreement was also observed for AI-assisted translation with human verification ($M = 3.88$) and AI-supported idea generation with retained human control over argumentation ($M = 3.86$), suggesting that AI was viewed primarily as a supportive tool for language and idea development rather than a substitute for authorial decision-making. Moderately high scores across items related to grammar correction, topic suggestion, citation support, editing assistance, and collaborative writing ($M = 3.74$ – 3.84) further confirm a preference for a complementary model in which AI supports writing tasks. At the same time, humans retain responsibility for critical analysis, synthesis, and validation. To sum up, the findings indicate that students endorse a human–AI co-writing model characterised by task-specific AI assistance, human oversight, and sustained emphasis on originality, critical thinking, and authorial control in research paper writing.

5. Reasons for Utilising AI in Crafting a Research Paper

The descriptive statistics regarding the reasons for utilising AI in crafting a research paper are presented in Figure 1.

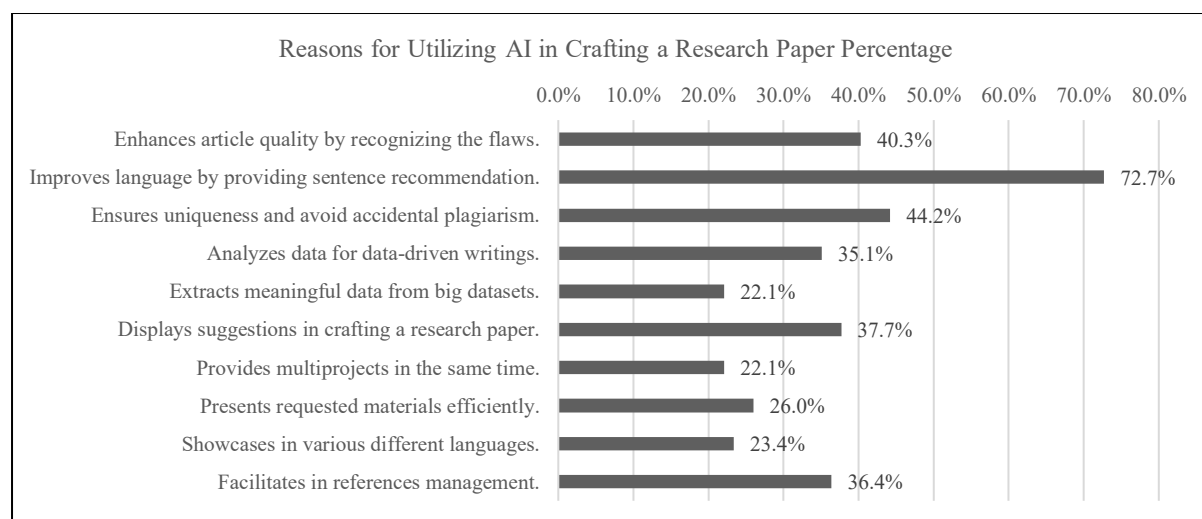


Figure 1. Reasons for utilising ai in crafting a research paper

Figure 1 reveals that students' primary motivation for using AI in research paper writing is linguistic enhancement, particularly improving writing through sentence recommendations (72.7%), which stands far above all other functions. This indicates that AI is predominantly perceived as a tool for immediate language production support rather than for higher-order academic reasoning. The second most salient cluster of reasons relates to academic quality assurance, including ensuring uniqueness and avoiding plagiarism (44.2%) and enhancing article quality by identifying writing flaws (40.3%). These findings suggest that students also associate AI with improving correctness and maintaining academic standards, although to a lesser extent than language support. A moderate level of use is observed for structural and procedural support functions, such as generating writing suggestions (37.7%) and facilitating reference management (36.4%), indicating partial reliance on AI for organising academic content and managing scholarly conventions. By contrast, relatively lower proportions are reported for advanced analytical and auxiliary functions, including data analysis (35.1%), efficient material presentation (26.0%), multilingual support (23.4%), and multitasking or data extraction features (22.1%). These lower values suggest that such capabilities are secondary considerations in students' use of AI for academic writing. Collectively, the data demonstrate a clear hierarchical pattern: AI is primarily used for linguistic support, followed by quality control. At the same time, analytical and technical capabilities remain peripheral in students' research writing practices.

6. Reasons for Not Utilising AI in Crafting a Research Paper

The descriptive statistics regarding the reasons for not utilising AI in crafting a research paper are presented in Figure 2.

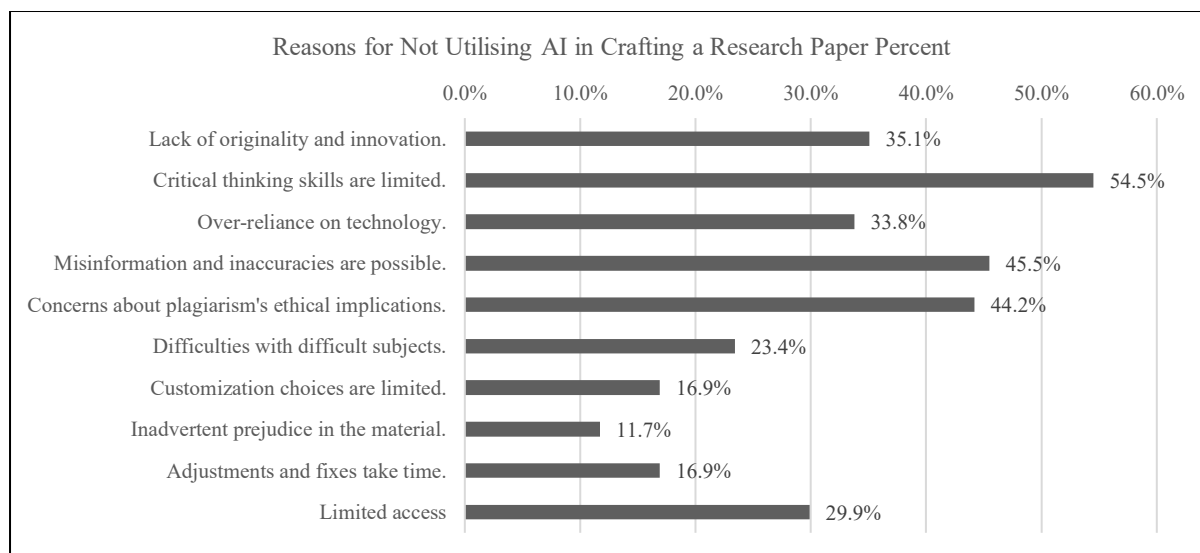


Figure 2. Reasons for not utilising ai in crafting a research paper

Figure 2 suggests that students' resistance to AI adoption in research paper writing was predominantly shaped by pedagogical and ethical considerations rather than technical barriers. The strongest concern centred on the possibility that AI could limit critical thinking skills (54.5%), indicating apprehension that excessive reliance on AI may reduce students' active engagement in analysis, reasoning, and knowledge construction. Concerns regarding misinformation and inaccuracies (45.5%) and plagiarism-related ethical issues (44.2%) further demonstrate that students questioned the reliability and academic legitimacy of AI-generated content. Moderate concerns related to a lack of originality (35.1%) and overreliance on technology (33.8%) reinforce the perception that AI may weaken independent writing development and creative engagement in academic tasks. By comparison, lower responses regarding limited access (29.9%), difficulties with complex subjects (23.4%), customisation limitations (16.9%), revision time (16.9%), and potential bias in generated materials (11.7%) indicate that technical and operational limitations were viewed as less influential. Collectively, the findings imply that students evaluated AI adoption not merely in terms of efficiency, but more critically in relation to its impact on intellectual autonomy, originality, and responsible academic practice.

7. Popular Artificial Intelligence in Crafting a Research Paper

The descriptive statistics for the popular AI used to craft a research paper are presented in Figure 3.

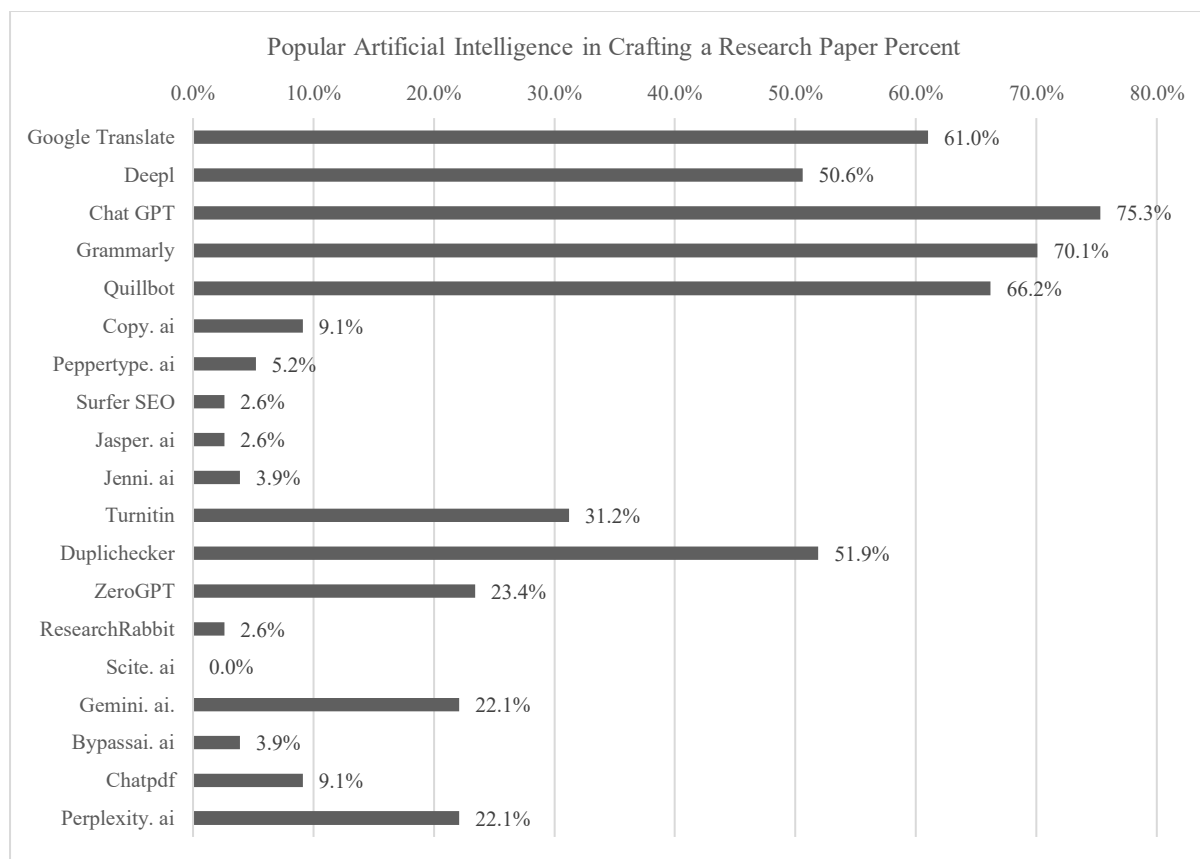


Figure 3. Popular artificial intelligence in crafting a research paper

Figure 3 demonstrates that students predominantly relied on AI tools that provide immediate linguistic and writing assistance, with ChatGPT (75.3%), Grammarly (70.1%), QuillBot (66.2%), and Google Translate (61.0%) emerging as the most frequently utilised platforms. This pattern indicates that AI adoption was primarily oriented toward improving language accuracy, paraphrasing, translation, and writing efficiency in research paper composition. The relatively high use of DupliChecker (51.9%) and Turnitin (31.2%) further suggests that concerns regarding originality and academic integrity also shaped students' AI practices. Meanwhile, more specialised academic and analytical platforms, such as ResearchRabbit, Jasper AI, and Scite AI, saw limited use, suggesting that students' engagement with AI remained focused on practical writing support rather than advanced research and scholarly analysis.

Interview Results

1. Leveraging Efficiency in the Research Writing Process

The interview findings indicate that students primarily perceived AI as a tool for enhancing efficiency in research paper writing. Participants reported that AI-supported drafting, paraphrasing, translation, grammar checking, and idea generation reduced the difficulty of composing academic texts in English. As one participant noted, "With AI, I can produce initial drafts faster and get useful feedback in real time" (SH). Another participant explained that AI assisted in "making recommendations, examining data, and identifying mistakes that could go unnoticed" (NN). These responses suggest that students mainly valued AI for improving productivity and linguistic accuracy during the writing process.

However, participants consistently differentiated between AI-supported technical assistance and higher-order intellectual work. Although AI was considered effective for language refinement and structural support, students perceived its contribution to critical interpretation and conceptual development as limited. One participant reflected that AI was

more useful for “technical improvements than complex research strategies” (SH), while another emphasised that “AI cannot fully replace human thought” (SAP). This pattern indicates that students viewed AI as a complementary writing aid rather than a substitute for human authorship. While AI enhanced procedural efficiency, responsibility for critical analysis, argumentation, and theoretical coherence remained under human control. This perceived efficiency extended beyond procedural support to idea development and organisational assistance, indicating that students viewed AI not only as a productivity tool but also as a facilitator of academic content development.

2. Support for Idea Development with Recognised Limitations

Participants also perceived AI as a supportive tool for exploring ideas and organising research papers. AI-assisted students in generating alternative perspectives, summarising information, and organising academic content, particularly during moments of conceptual uncertainty. As one participant explained, “AI would save time by compiling and summarising data rapidly and creating well-structured writing that needed little editing” (AK). Another participant noted that AI contributed to “improving the organisation and clarity of a research paper” by helping arrange ideas and refine language (NN). These responses suggest that students viewed AI as beneficial for facilitating idea development and improving structural coherence in academic writing.

Despite these advantages, participants demonstrated critical awareness of AI’s limitations in handling contextual and conceptual complexity. Several participants reported that AI-generated suggestions were occasionally overly general or irrelevant to specific research contexts. One participant stated that AI showed an “inability to understand the nuances of arguments and creativity in writing” and sometimes produced “irrelevant or general suggestions” (SH). Another participant similarly noted that “AI still has limitations in understanding the context that I need” (CDR). These findings indicate that although AI supported preliminary idea generation and organisational assistance, students failed to perceive it as a reliable source for deeper theoretical interpretation or disciplinary precision. Instead, AI functioned primarily as a heuristic aid, while contextual judgment and intellectual decision-making remained under human control. These limitations reinforced students’ awareness that intellectual judgment and contextual interpretation in academic writing remained dependent on human authorship.

3. Maintaining Human Control and Critical Judgment

A central theme emerging from the interviews was the importance of maintaining human control in AI-assisted writing. Participants consistently emphasised the need to evaluate, verify, and selectively adopt AI-generated suggestions rather than accepting them uncritically. As one participant stated, “I chose to accept suggestions when they supported my argument and rejected suggestions when they were inconsistent with my research focus” (SH). Another participant similarly noted that “AI cannot fully replace human thought” (SAP). These responses indicate that students rarely perceived AI as an autonomous author but as a supportive tool whose outputs required human judgment and scrutiny.

Participants also associated excessive dependence on AI with risks to writing development and academic integrity. Some expressed concerns that overreliance on AI could reduce originality, weaken independent writing skills, and increase the possibility of inaccurate or ethically problematic content. One participant reflected, “If I use AI too often, I worry that my own writing skills will decline” (SAP). Another participant highlighted concerns regarding “academic integrity” and the need to “double-check the information” generated by AI (AK). These findings suggest that students viewed human oversight not merely as a procedural necessity but as essential for preserving authenticity, critical reasoning, and responsibility in

academic writing. This emphasis on human oversight also revealed students' awareness of the ethical and intellectual risks associated with excessive dependence on AI in academic writing.

4. Challenges, Risks, and Ethical Concerns in Using AI

Even though participants acknowledged the practical benefits of AI, they also expressed concerns regarding its influence on independent learning and academic integrity. A dominant concern involved the risk of overreliance, which participants associated with reduced critical engagement and weakened writing autonomy. As one participant stated, "I became addicted to using AI ... and lazy to work on my own" (SA). Another participant noted that excessive dependence on AI could make users "less able to think critically" (CDR). These responses indicate that students perceived AI as potentially shifting academic writing from active knowledge construction toward passive technological dependence.

Participants additionally questioned the reliability and ethical implications of AI-generated content. Concerns about inaccurate information, reduced originality, and inadvertent plagiarism emerged as important considerations that require careful human evaluation. One participant explained that AI use raised "ethical questions regarding academic integrity" and required them to "double check the information" to avoid errors and plagiarism (AK). This pattern suggests that students regarded verification and ethical judgment as essential components of AI-assisted academic writing. Rather than rejecting AI entirely, participants emphasised the need for a balanced, critically monitored use to preserve the authenticity and credibility of scholarly work. The challenges and ethical concerns encountered during AI use gradually influenced how students understood the actual role and limitations of AI in academic writing.

5. Changing Perceptions and Expectations of AI

Participants' experiences reflected a gradual shift from initial optimism toward a more critical understanding of AI in academic writing. Early expectations positioned AI as capable of performing complex academic tasks independently. However, continued engagement revealed that its strengths were more closely related to technical and procedural support than to deeper scholarly reasoning. As one participant explained, "At first, I thought AI would perform in-depth analysis and original idea generation, but later I realised it was more useful for information gathering, citation management, and basic content creation" (AK). Another participant similarly observed that AI was more effective for "technical improvements than complex research strategies" (SH).

This shift indicates that students increasingly perceived AI as a complementary writing aid rather than a replacement for human intellectual work. Their experiences demonstrated growing awareness that critical interpretation, contextual understanding, and originality remained dependent on human judgment. The findings therefore suggest the emergence of more critical AI literacy, in which students recognised both the practical benefits and the epistemological limitations of AI-assisted academic writing. Taken together, these themes demonstrate that students' perspectives on AI adoption were characterised by a balance between recognising its practical benefits and maintaining critical awareness of its intellectual and ethical limitations in academic writing.

The qualitative findings supported the questionnaire results by clarifying students' perceptions of AI-assisted academic writing. Questionnaire responses showed that students mainly used AI for language support, writing efficiency, idea organisation, and plagiarism checking, while also expressing concerns about critical thinking, originality, and academic integrity. These patterns were reinforced in the interviews, where participants described AI as helpful for technical assistance but limited in its ability to support deeper analysis and scholarly reasoning. The convergence of both datasets strengthens the study's methodological

triangulation and indicates that students viewed AI as a complementary aid rather than a substitute for human authorship.

Discussion

This study examined Indonesian EFL undergraduate students' perspectives on the adoption of AI in Academic Writing courses, particularly in the composition of research papers. The findings suggest that students perceived AI as beneficial for improving writing efficiency and supporting procedural aspects of academic writing. Consistent with earlier studies (Almanea, 2024; Nguyen et al., 2024; Werdiningsih et al., 2024), AI was viewed as a tool that reduced cognitive demands and facilitated the writing process. Compared with Malik et al. (2023), whose findings primarily emphasised grammar and organisational support, the present study indicates broader patterns of AI integration involving idea development, information management, and research assistance. This finding suggests that AI has increasingly become embedded within students' academic literacy practices rather than functioning solely as a language correction tool.

However, the findings also demonstrate that students clearly distinguished between procedural assistance and deeper intellectual engagement. Although AI was perceived as effective for supporting manageable writing tasks, participants consistently viewed critical interpretation, contextual understanding, and original argumentation as fundamentally dependent on human judgment. This perception aligns with Corbin et al. (2025), who argued that meaningful academic writing continues to require human reasoning, disciplinary awareness, and reflective thinking. The findings, therefore, indicate that students increasingly conceptualised AI as a complementary learning aid rather than an autonomous academic authority. Pedagogically, this highlights the importance of integrating AI in ways that strengthen critical AI literacy, evaluative judgment, and ethical awareness, rather than promoting passive technological dependence.

The study further reveals evolving forms of learner autonomy and digital literacy in higher education. Meanwhile, participants acknowledged AI's practical value in supporting writing development and access to academic resources; they also expressed concerns regarding overreliance, originality, misinformation, and academic integrity. Similar concerns have been identified in previous research on the ethical and cognitive implications of AI-assisted writing (Aladsani, 2025; Luo, 2024; Wise et al., 2024). Contrary to demonstrating unconditional acceptance of AI, students appeared to adopt a selective, reflective approach to its use. This pattern suggests that effective AI integration increasingly requires students to critically evaluate the reliability, appropriateness, and ethical implications of AI-generated content.

The prominence of ChatGPT in this study, as in the findings reported by Polakova and Ivenz (2024), further illustrates the growing influence of generative AI in EFL academic writing practices. Nevertheless, participants consistently perceived AI as more effective for procedural and heuristic support than for higher-order conceptual reasoning. From a sociocultural perspective, this finding suggests that AI may function as a scaffold within learners' Zone of Proximal Development (ZPD) by supporting lower-level writing challenges while still requiring human mediation for interpretation, argumentation, and knowledge construction (Chen, 2021; Xi & Lantolf, 2021). In this sense, AI facilitated the writing process without replacing students' intellectual responsibility.

Participants also emphasised the importance of maintaining human control and critical evaluation in AI-assisted writing. The need to verify AI-generated content reflects students' growing awareness of academic integrity, authenticity, and intellectual accountability, reinforcing arguments proposed by Wise et al. (2024). Concerns regarding excessive dependence on AI, particularly its potential impact on originality and independent writing competence, also parallel findings reported by Hysaj et al. (2025). These findings indicate that

students increasingly positioned themselves as active evaluators of AI-generated knowledge rather than passive recipients of technological assistance.

Overall, the findings show that students used AI mainly as a writing assistant, while still recognising that argument development, source evaluation, and final decisions should remain under human control. Instead of replacing human authorship, AI appears to reshape how students negotiate writing processes, knowledge construction, and academic responsibility in digitally mediated learning environments. The study, therefore, contributes to ongoing discussions on AI-assisted academic writing by highlighting the need to balance technological support with critical literacy, learner agency, and ethical academic practice.

CONCLUSION

This study reveals students' perspectives on the adoption of AI in academic writing, particularly in the composition of a research paper. The findings illuminate promising potential in incorporating AI into academic writing, with numerous advantages, such as assisting with generating ideas, structuring, proofreading, editing, polishing, and final drafting. The findings suggest that AI helped students improve writing efficiency and language accuracy, especially in drafting, proofreading, editing, and revising research papers. Beyond the benefits, the findings expose ample critical evaluations of using AI to accomplish writing tasks, including integrity, authenticity, originality, plagiarism, and ethics. Despite those limitations, users can only partially adopt the AI's suggestions. However, the final decision is in the learner's hands, where honesty and dishonesty are relative to the learner's integrity. This indicates that facilitating AI in academic writing classes is necessary to address regulations and prohibitions, thus enabling learners to understand how far they might adopt or reject AI's use. Even though the results show that the learners understand the risks of depending on AI, which might lead to addiction and competence decline, it is still important to repeatedly remind the learners of the negative effects of using AI to accomplish writing tasks without restriction or filter. Therefore, the learner can be more critical and selective in adopting AI's suggestions or inputs. The results imply that the teacher, learner, stakeholder, and AI designer should consider not only the features but also ethical rules and guidelines for their adoption. Subsequently, adopting AI in AW requires a pedagogical strategy that must be communicated to learners before its use, for instance, by stating the allowance part for using AI in the writing process, or vice versa.

Despite the current study demonstrating positive effects of AI facilitation in writing courses, several limitations remain, including the small number of participants, which may not reflect the general population but rather a specific case study. For further study, it may be conducted with research on a larger number of respondents or participants. Subsequently, the data were obtained from emerging online documentation and analysed using only two instruments: a questionnaire and an interview. Therefore, the next research may include multiple instruments, such as focus group discussions, reflective journals, or experimental design instruments. The focus of this study is limited to the utilization perspectives of AI in general investigations. Future research may examine other constructs or dimensions, such as identity, agency, self-efficacy, anxiety, self-regulation, collaboration environment, AI literacy, and so on, within the Academic Writing development landscape.

FUNDING

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

INFORMED CONSENT STATEMENT

Participation in this study was voluntary. Prior to participation, all participants were provided with clear information regarding the study's objectives, procedures, potential risks, and

anticipated benefits. Participants were assured of the confidentiality of their personal information and informed that all data collected would be used solely for research purposes. They were also informed of their right to withdraw from the study at any time without penalty. Informed consent was obtained from all participants prior to data collection.

DATA AVAILABILITY STATEMENT

The data generated and analyzed in this study are not publicly available because they contain information that could compromise participant privacy and confidentiality. Restricting public access ensures compliance with ethical research principles and applicable data protection regulations. Nevertheless, the dataset may be made available to qualified researchers upon reasonable request for verification or further analysis. Any such request will be reviewed on a case-by-case basis and will require prior approval from the appropriate institutional ethics authority.

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