

*The Impact of AI Writing Tools on Academic Writing:
The Perspective of Higher Education Students in Indonesia*

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Abstract

AI's advancement can raise the quality of students' writing and increase the demand for educators to understand how to use AI approaches in classroom to achieve educational success. In this study, researchers conducted the use of digital tools to organize the writing of higher education students. This expanding phenomenon has initiated discussions regarding the influence of technologies on the academic field. The primary goal of this study is to investigate types of AI writing tools and their impacts on academic writing. This research was conducted through a qualitative method using a case study design regarding students' perspectives on AI writing tools to assist their academic writing. Data were analyzed through thematic analysis and interpretation of the interview transcripts. The participants were six Indonesian students with different educational backgrounds (undergraduate, graduate, and postgraduate). The findings showed that students had pros and cons to the use of AI. They argued that AI had positive views as helpful tools for checking spelling, grammar, paraphrasing and summarizing, translating, proofreading, citing, and managing references. Despite these benefits, there are concerns regarding whether ideas from users are collected into the AI database and possibly shared with other users due to copyright and plagiarism issues. This question became their concern when students wanted to convey ideas to AI. It was concluded that AI's role in improving academic writing had a significant impact on generating ideas and revising students' writing. This research will be valuable for future investigations in exploring the utilization of AI in generating writing assignments.

Keywords: Academic Writing, AI Writing Tools, Higher Education, Impacts of AI Writing Tools

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Introduction

There is evidence that AI (Artificial Intelligence) plays a pivotal role in managing various aspects of education, especially in higher education context, including paperwork and individualized learning. Given AI's potential to raise the quality of education and the increasing demands on educators to understand and successfully use AI approaches in the classroom to achieve academic success (Zhai et al., 2021), further attention is required. Its practical, for instance, speeds up tasks such as building curriculum-based, distinctive designs for students, hence improving efficiency and flexibility in the learning process (Bisen et al., 2021). Moreover, it demonstrates that AI in academic writing is relevant to its practical use and is of concern when everyone relies on technology (Tang et al., 2024). With AI's ability to construct ideas and edit their writing for students, using it to help them complete their papers has also grown in popularity. With an extensive range of software and tools designed to aid writers in managing all aspects of the writing process, AI has become increasingly common in writing (Morrison, 2023). Several AI features have been proposed to make writing easier for students and scholars. In narrative writing, they demonstrate how AI and human beings may work together on any task up to the paraphrasing stage (Coenen et al., 2021).

Recent studies continue to debate the practical application of AI in writing, particularly for published works and academic writing. Many studies have been carried out regarding the impact of AI use. One of these includes the effects of AI on pedagogy, automation management, ethics, and social issues, which have spurred discussion on the possible application of AI and robotics in higher education (Cox, 2021). It has also previously been observed that students' usage of AI writing tools may improve the quality of their writing in many aspects. As Storey (2023) has argued, the investigations might become more accurate and reliable when AI is integrated into the dissertation writing process. Its usage in academic writing, for instance, significantly influences the learning environment and raises academic achievement, seen from the teachers' perspective (Marzuki et al., 2023). This milestone is also perceived in other parts of writing, such as the variety of words employed and its ability to rephrase the sentences cited.

Despite its integration helps in enhancing qualities like creativity, integrity, and critical thinking (Zhai et al., 2021), it also provides threats like the effect on laws concerning the copyright and the recognition of authors and ownership of AI-generated work (Mazzi, 2024). As stated by Castellanos-Gomez (2023), there is now a legitimate debate concerning the possibility that it should be used as co-author articles, which raises potential copyright issues. It is also related to the growing concern that individuals could abuse it to generate excellent writing and essays under their own names as AI technology advances and becomes more competent (Jarrah et al., 2023). In addition, its application greatly decreases accuracy concerning the paraphrase-writing phase when employing AI (Krishna et al., 2024). Indeed, as stated by (Gayed et al., 2022), guides for educators using AI for writing are also required to support the use of digital writing.

Unfortunately, studies addressing the impacts of AI writing tools on academic writing implementation in various English education students' educational backgrounds, from undergraduate to postgraduate in Indonesia, are still lacking. Scholars have encountered a range of impacts on the application of AI writing tools in education, both positive and negative sides. Since AI writing is an intrinsic technology, there is still much to learn about its applications, especially for English education students in Indonesia, and further discussion is needed.

This study seeks to understand the impacts of AI writing tools on academic writing by Indonesian higher education students, ranging from undergraduate to postgraduate. It focuses exclusively on the ways in which AI writing tools influence and enhance writers' writing practices at different phases, ranging from conceptualization and choices of words to AI's capacity to summarize or paraphrase their work. By examining the potential benefits and the drawbacks of its practices in greater detail and examining how they relate to integrity, honesty, and originality in writing, this study will contribute to a better understanding of how Indonesian students employ these actions.

This study aims to address the following questions:

RQ1: What are the types of AI Writing Tools Used by Higher Education Students in Indonesia?

RQ2: What are the Impacts of Using AI Tools Used by Indonesian Education Students for Their Academic Writing?

Literature Review

AI for Academic Writing

Artificial intelligence (AI) has had a significant impact on our daily lives, influencing our thought processes, behaviours, and interactions in profound ways (Chen et al., 2020). The engagement of artificial intelligence (AI)-based writing tools has attracted students to prepare their academic writing, suggest sentence structure and style recommendations, and facilitate content creation. The evolution of AI provides learners with personalized learning opportunities and tutors for written jobs to help them generate ideas and innovations. In 2022, the Journal of Nature indicated that researchers were already using chatbots as study aids to assist them organize their thoughts, receive feedback on their appointments, write code, and even outline study literature. Dergaa and colleagues (2023) reported that it has been evident that AI can create coherent language, and it is challenging to differentiate AI sentences from those made by humans (Dergaa et al., 2023). In addition, Tu and Nguyen (2023) also stated that artificial intelligence is a helpful instrument that can significantly reduce individuals' time and efforts spent on tasks and addressing problems.

The implications of AI-based tools for academic writing offer opportunities and considerations. The potentially positive impacts on writing showed a richness of insights to develop and be creative in exploring ideas (Mazzone & Elgammal, 2019) and improving languages with recommendations (Malik et al., 2023). Tools to produce student writing may be a threat in the future. As educators, we must have a comprehensive understanding (Gayed et al., 2022) and must explore how to apply the use of digital tools in student writing to prevent loss of originality in authorship and creativity. In addition, students' work has an impact on copyright and plagiarism. This phenomenon happens due to the ideas that are generated from digital writing tools need to be clearly referenced.

Higher Education Students' Perspectives on AI

Artificial intelligence (AI) is indispensable in modern academia, facilitating improvements in educational efficiency, effectiveness, and productivity (Baidoo-Anu et al., 2024). The use of computer-based applications and tools powered by artificial intelligence (AI) is becoming more common among educators and students at both the school and university levels. These include intelligent machines and adaptive learning systems. Technology-based learning offers

the potential benefits of facilitating personalized learning, enabling students to meet their needs (Chen et al., 2020).

The rapid advancement of new technologies forces industries worldwide to innovate continuously to remain competitive and relevant in the ever-changing global market. Students and lecturers are therefore called on to act as pioneers in integrating digital tools such as AI, ensuring that its safe and proper use is supported to benefit teaching and learning. A few studies reported that ChatGPT could be employed by students engaged in higher education as a tool for independent study. AI has the capacity to gather and convey knowledge. However, more initiatives need to incorporate AI into learning tasks about specific subject matter domains. Integrating AI into such tasks is of paramount importance, for it reflects the manner in which humans address real-world problems (Rashid & Kausik, 2024).

Methods

Research Design

This study was conducted through qualitative research using a case study, in which a small amount of data was gathered through observation, recordings, interviews, and documents (Travers, 2001). To address the research questions, the interview was conducted to gather students' perspectives on AI writing tools to assist their academic writing. The interview data collected was analyzed using thematic analysis techniques, which involved identifying codes and themes in the data obtained from the participants.

Data analysis techniques are explained in the following illustration.

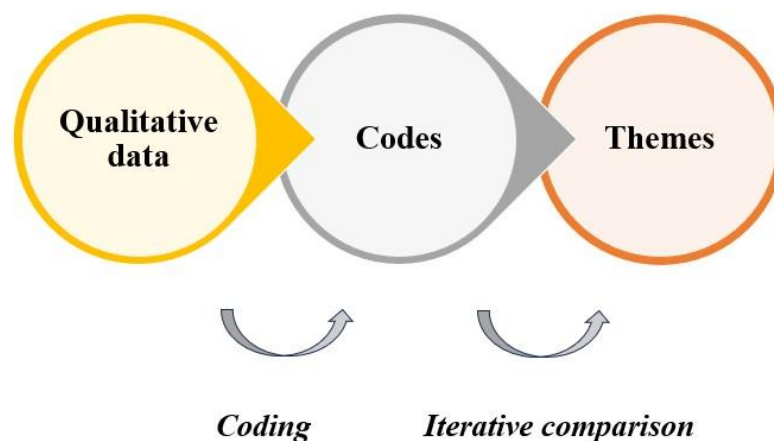


Figure 1: Research Design

Research Participants

This study focuses on the perspectives of students from various educational backgrounds, undergraduate to postgraduate, about using AI writing tools to support their academic writing. Six participants, two from each educational background, shared their views about the use of AI writing tools. The participants' demographic data is as follows:

Table 1: Participants of the Research

<i>Name</i>	<i>Gender</i>	<i>Educational background</i>	<i>Major</i>
HA	Female	Undergraduate student	English Education
UA	Female	Undergraduate student	English Education
SH	Female	Graduate student	English Education
AN	Female	Graduate student	English Education
MF	Male	English Education	Post Graduate
A	Male	Sport Science	Post Graduate

Instruments

We created two different kinds of tools to address the two research issues in this study, as well as the potential of AI as a tool with both benefits and drawbacks. We identify six concerns when examining the various forms and uses of AI to support academic writing. The kinds of AI functions in writing support and references that we employ to elicit additional information from participants are as follows.

Table 2: Types of AI Writing Tools

<i>Theme</i>	<i>Subtheme</i>	<i>References</i>
Spell and Grammar Checking	Types of accuracy User experience	Dale & Viethen (2021); Fitria (2021)
Online translation tools	Types and accuracy Lexical complexity	Burkhard (2023); Chung & Ahn (2022)
Paraphraser and summarizer tools	Types of the tools and accuracy	Burkhard (2023)
Proofreading and Editing Tools	Types of the tools and accuracy and writing errors	(Magulod Jr et al., 2020); Al-Ahdal (2020)
AI-based content generators	Types of the tools and accuracy and ethical concerns	(Burkhard, 2023); Anderson et al. (2023)

We identified six concerns when examining the various forms and uses of AI to support academic writing. The kinds of AI functions in writing support and references that we employ to collect additional information from responders are as follows.

Table 3: The Benefits and Drawbacks of AI Writing Tools

<i>Theme</i>	<i>Subtheme</i>	<i>References</i>
Potential Benefits of AI Writing Tools	Accessibility Efficiency and Feedback Synthesize Materials	Gayed et al. (2022); Algerafi et al. (2023); Almaiah et al. (2022); Dangin et al. (2023)
Drawbacks of AI Writing Tools	Originality of writing Creativity of writing Ethical consideration	Livberber & Ayvaz (2023); Makarius et al. (2020); (Almaiah et al., 2022);

Findings and Discussion

RQ1: What are the types of AI Writing Tools Used by Higher Education Students in Indonesia?

Many kinds of AI writing tools were put out by undergraduate, graduate, and post-graduate students with a range of educational experiences. Six purposes of AI, particularly used in academic writing, were identified by the researchers, spell and grammar checking, online translation, paraphrase and summarize, proofreading and editing, content generator, and citing and reference management. Undergraduate theses, theses, and articles for SINTA and Scopus-indexed publications are the types of academic writing produced by the students.

Table 4: AI Writing Tools Used by the Students

<i>Students</i>	<i>Spell and Grammar Checking</i>	<i>Online Translation</i>	<i>Paraphraser and Summarizer</i>	<i>Proofreading and Editing</i>	<i>Content Generators</i>	<i>Citing and Managing References</i>
HA	Grammarly	Google Translate	Quillbot	Microsoft Word	Chat GPT Perplexity	citethisforme.com MyBib
UA	Grammarly	Google Translate Quillbot	Quillbot	-	ChatGPT	Mendeley References
SH	Grammarly	ChatGPT DeepL	Quillbot ChatGPT Humata	Quillbot Grammarly Google Doc	ChatGPT	Mendeley References
AN	Thesaurus	Google Translate DeepL	Quillbot	Google Doc	ChatGPT Perplexity Notion	Mendeley References
MF	Grammarly	DeepL	Quillbot	-	Scite.AI	Mendeley References
A	Quillbot	Google Translate iOS Translation	ChatGPT	ChatGPT	-	Mendeley

The most common tool for students to check their spelling and punctuation is Grammarly. However, students also frequently find that it provides a lot of feedback when it come across complex sentence, even though their writing is grammatically correct.

RQ2: What are the Impacts of Using AI Tools Used by Indonesian Education Students for Their Academic Writing?

To examine both the benefits and the drawbacks of employing AI in academic writing, this section explored how higher education students in Indonesia use it. It discusses the broad and general viewpoints of six students from various educational backgrounds.

Potential Benefits of AI Writing Tools

Three areas were highlighted in the analysis of the potential benefits of using AI in assisting academic writing by students: the accessibility of each AI for each purpose, efficiency, and feedback, and the way AI writing tools synthesize the contents for writing.

1. The Accessibility of AI Writing Tools

We found accessibility to be one of the advantages of adopting AI writing tools for academic writing (Gayed et al., 2022). The majority of participants who shared their views on the availability of AI writing tools concurred that these tools are highly beneficial for writing, particularly when it comes to editing and proofreading.

Yes, it supports producing writing. (HA)

Additionally, SHM clarified in its assistance to help writers write that this might also be a problem for humanity since we might grow overly reliant on AI. Despite its simplicity of use in assisting users with writing, AI poses a risk to people due to the potential for over-reliance. Furthermore, this concept of originality is a recent issue for academics.

So far it really helps, even if we are careless, we can depend on AI. (SH)

The impact is quite significant but it requires detailed writing that is not obtained through AI because it is based on my personal experience. (MF)

According to the majority of users, AI writing tools are helpful and readily available anywhere, at any time. When it came to employing AI writing tools to assist with their academic writing, none of the participants reported any issues when implementing it. Nevertheless, to develop their ideas, users must be proficient in precise writing, which is what the AI requires.

2. The Efficiency and Feedback Given by AI Writing Tools

On the effectiveness of AI writing tools and user feedback. Four issues are emphasized in this sub-theme. The first question concerns the participants' perceptions of AI as a tool that may enhance writing efficiency. There are four concerns found in this aspect.

Firstly, as a means of increasing writing productivity, according to several participants who voiced their ideas, the practicality of AI makes it highly beneficial to access the questions they pose, and access to journals is also possible.

It can search for related references quickly; of course, it helps the author review an article quickly. Feedback in the form of relevant and trusted journal sources. (MF)

The second one is how AI writing tools are regarded as a technology that can assist in the development of writing or productivity and offer its users insightful feedback, particularly when it comes to identifying instances of plagiarism.

Quite efficient, because sometimes now there is also an AI detector, it looks like we are just copying and pasting. Now, how do I learn a lot? I am also inquisitive, and now ChatGPT is getting more advanced to the point where it can give the sources, which is very beneficial for me. (UA)

Maybe it depends on the person; the answer is efficient, in my opinion, because in terms of time, yes, from the knowledge, yes; for feedback, I want to, for example, if I want to search for this in detail, like the sources, even the book, for example, where to download it, right? It's the same as what we ask; it can be answered directly; sometimes, what we ask doesn't match what we want. (SH)

The third one is the involvement of users in the writing process for better quality. User instructions and directions impact AI's writing outcomes while exploring or generalizing ideas. Despite the benefits of AI tools for paraphrasing, hand paraphrasing remains the primary method for maintaining the writing's originality. There needs to be a balance maintained between depending on AI and controlling writing outcomes smartly from both AI and humans.

Lastly, users' satisfaction with AI writing tools sometimes does not meet their expectations. They think that occasionally while employing AI writing tools, the tools may need to provide the answers that users have requested accurately. As stated by the participants, it also increases the possibility that AI will cause issues with plagiarism in writing.

3. Synthesize and Materials

The way AI synthesizes user-provided materials is the third. Based on the data analysis findings and the themes identified in the interview data, three issues regarding the use of AI in material synthesis can be emphasized. The ability of AI writing tools to generalize user ideas or notions to get answers or explore their ideas is the first case. When coming up with writing ideas, users believe AI can respond to questions or orders from both a positive and negative perspective. Because users refrain from making precise or explicit inquiries, AI tends to generalize concepts unambiguously.

AI can give more specific ideas depending on how clear the command is. (HA)

The second is practical academic writing, which includes references and citations specifically. AI writing tools respond to user commands with concepts, thoughts, or responses. It involves using AI as a citation tool to make academic writing easier. Users think that mentioning academic writing can be done more quickly with AI. It is the user's responsibility to confirm that the responses provided by AI are reliable and not computerized, as people also feel that too general AI responses are not providing the details that they want.

Yes, the discussion is simple overall. Usually, I know what the subject is about, so I ask the chat what may be discussed about the certain theme. The answer is provided, but occasionally, it is too general so it is our responsibility to be specific to find more references. (SH)

The last is the incapability of AI writing tools to expand on user-provided ideas. They contend that there are still cases in which AI writing tools are unable to connect concepts with writing structure. It lacks specificity and simply concentrates on broad topics. They think that humans and AI still speak differently at times and that AI might not comprehend user intent or inquiries.

There is less bridging between ideas and writing organization. Because AI only focuses on general things, not as detailed as what humans do. It is based on my personal experience. (MF)

When using AI in writing, particularly for academic writing, humans occasionally have limitations when it comes to synthesizing user-provided ideas for writing. They assert that AI has limitations in providing replies, meaning that not all of the information we provide can be fully comprehended by AI.

Drawbacks of AI Writing Tools

In addition to serving as a writing assistant, AI writing tools fall short in offering users a comprehensive range of benefits. This is because AI and technology have the potential to endanger humans. After examining the potential drawbacks of AI writing tools, researchers discovered that there are at least three issues that could arise. Three points, originality of the writing, creativity, and ethical consideration, are also emphasized in this study's analysis of the drawbacks of employing AI writing tools. The following explanation applies to the theme analysis of the interview.

1. The Originality of Writing

Every participant has a distinct perspective on how to avoid plagiarism and preserve the originality of their writing when using AI writing tools to write an article. The first is the feeling that users or students are dependent on AI writing tools for their writing. This issue comes up because AI can easily provide any response. Furthermore, relying too heavily on AI may raise concerns about the quality of writing. Students' or scholars' critical thinking abilities and academic work will be doubted.

If students use AI too often, it is feared that they will feel dependent on the tool, which can affect the quality and skills of students' writing as well as originality because it involves too much AI in writing. Teachers can educate about plagiarism and implement clear policies and consequences for students whose work is proven to contain a lot of plagiarism. (HA)

The second is users' uncontrolled use. Users are prompted to contribute by writing and compiling articles. Excessive use not balanced by personal ideas can weaken critical thinking abilities and worsen people's writing. When using AI to make their work easier, participants contended that each person's initiatives must also be considered.

2. The Creativity of the Sentences

The second issue concerns the writer's originality in exploring and developing the phrases or sentences. This challenge presents two concerns: the lack of filtering of responses or writings by students and the incompatibility of AI-generated solutions with field data. First, they argue that most people still rely on AI without filtering the data provided. They feel that relying on AI does not mean copying and pasting, but how AI writing tools can assist and explore ideas. They demonstrate that, although certain negative aspects of AI in generating responses, the input of each human should remain the main foundation in writing.

I sometimes filter out what ChatGPT provides, but I rely on ChatGPT and AI. However, as previously said, it can be overly generic at times and fail to match. It implies it's not as detailed as we'd want. Therefore, I filter and test it thoroughly, just like I would with other sources. (SH)

The second is AI's inability to offer adequate answers. Participants believed that most AI-generated answers could not be more specific and were still excessively broad. In addition to AI processing, individuals had to search for more relevant and reputable sources manually.

I sort it out because AI concepts can be too robotic, as if they don't comprehend, or aren't human. (UA)

Still need to read the AI-provided literature and modify the field data to real-time conditions in order to provide a thorough discussion. (MF)

3. Ethical Considerations

The primary challenge pertains to collecting human ideas within the AI database and vice versa. A participant expresses concern regarding the potential for AI to serve as a repository for ideas to be integrated into its database, similar to how humans extract ideas at no cost from AI.

Yes, I also have concerns about whether my ideas will end up in the database or to the people who ask. I also limit myself from giving or asking for everything in the chat. (UA)

The second is the occurrence of original works that are easily spreadable. Artificial intelligence's simplicity of use may also be abused concerning potential plagiarism. AI-generated content can be claimed or copied by others. It raises questions about the person's character and integrity.

In my opinion, misusing AI, such as producing fake works, spreading irrelevant data, or copying, can be problematic. People can ethically claim AI work as their own, which raises doubts about integrity. It is crucial to employ AI sensibly and truthfully if it is not used transparently. (AN)

The final issue is the lack of AI detectors for tracking and identifying writing. Overuse can also run the danger of harming creativity and critical thinking abilities, and it might raise doubts about a work's originality.

When there is no supervision and AI detector, it will undoubtedly raise concerns regarding the originality and level of creativity of a piece of writing. (MF)

Conclusion

AI has become more and more involved in scholarly contributions over time. Considering the benefits and drawbacks of AI itself, the application of AI in the industry is becoming a significant topic for discussion. This study investigates two research questions concentrating on the different types of AI writing tools Indonesian students use and their points of view regarding both the benefits and drawbacks of AI's use in higher education. According to the analysis's findings, Chat GPT is the most often used AI, particularly among Indonesian students, primarily because of its primary purpose of generating content. Students believe that using Chat GPT for writing is a great way to explore concepts and find answers.

Although students frequently use Grammarly, another well-known AI writing product, such as Ms. Word Translation, may also be a choice. Additionally, Mendeley References is the most popular citation tool of all the AI technologies that students utilize, particularly for academic writing.

Analyzing the use of AI technologies for academic writing reveals benefits and drawbacks for users. These resources are beneficial for proofreading, translating, paraphrasing, and even citation. The advantages include time efficiency, feedback, easy access to the instruments utilized, and how AI aids in material synthesis. Regarding the drawbacks, particularly the

text's originality, users will likely continue depending on AI for unrestricted writing use. If AI users incorporate AI concepts into their writing without filtering them, their originality may be questioned.

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