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**EFL Students' Perception in Indonesia and Taiwan on Using Artificial Intelligence to Enhance Writing Skills**

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## EFL STUDENTS' PERCEPTION IN INDONESIA AND TAIWAN ON USING ARTIFICIAL INTELLIGENCE TO ENHANCE WRITING SKILLS

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### Abstract

*Technological advancements in education have introduced Artificial Intelligence (AI) as a transformative tool to enhance academic writing skills in English as a Foreign Language (EFL). This study explored EFL students' perceptions in Indonesia and Taiwan regarding the role of AI in improving their writing abilities. Using qualitative research methods, data were collected through semi-structured interviews with 20 second-year students specializing in English at an Islamic State University in Indonesia and a National University in Taiwan, who actively use AI tools in their writing processes. Analysis based on Creswell's thematic framework revealed positive perceptions of AI, with benefits such as improved grammar, sentence structure, paraphrasing skills, vocabulary enrichment, and efficiency in topic generation. However, concerns also emerged about excessive reliance on AI, reduced creativity, and issues of plagiarism and authenticity. These findings highlighted the dual-edged nature of AI in academic writing, emphasizing the need for careful integration and risk mitigation to fully leverage AI's educational benefits. This research enriched the discourse on technological advancements in EFL education and provides insights for curriculum developers, educators, and policymakers to optimize AI use in academic settings. The practical implications of these findings included strategies to enhance the effectiveness of AI in education and foster innovation in EFL teaching.*

**Keywords:** *EFL Students; Indonesia; Taiwan; Academic Writing; Artificial Intelligence.*



## A. Introduction

The integration of Artificial Intelligence (AI) in education has significantly advanced especially in language acquisition (Gayed et al., 2022; Harunasari et al., 2023; Nasution et al., 2024). AI tools are enhancing learning outcomes in English as a Foreign Language (EFL) settings, improving writing proficiency and teaching techniques (Al-Qahtani, 2021; Aljuaid, 2024; Khalifa & Albadawy, 2024; Pratama & Hastuti, 2024). However, there is a gap in understanding EFL students' perceptions of AI tools in academic writing, which influences the adoption and effectiveness of AI-based learning interventions (Bahroun et al., 2023; Bower et al., 2024; Mahmud et al., 2023).

Despite growing AI adoption in education, empirical evidence on EFL students' perceptions of AI tools for academic writing remains limited. This gap is crucial as students' perceptions affect the adoption and success of AI-based learning (Bahroun et al., 2023; Bower et al., 2024). Previous research indicates that AI can enhance writing skills (Bower et al., 2024; Bahroun et al., 2023; Zawacki-Richter et al., 2019), but studies on EFL students' views on AI are scarce (Bahroun et al., 2023). AI-driven digital feedback improves writing through timely, specific suggestions (Hojeij & Ayber, 2022). Indonesian students view ChatGPT positively for writing improvement, though some are neutral about its explanations (Zebua & Katemba, 2024).

Systematic reviews show AI's potential to optimize English skills, motivation, and engagement, despite early integration stages (Son et al., 2023). Indonesian EFL students find AI tools beneficial and enjoyable for writing improvement (Sumakul et al., 2022). This research explores perceptions of AI in academic writing among EFL students at a State Islamic University in Indonesia and a National University in Taiwan (Lee et al., 2024; Cadis et al., 2023; Susanto & Nanda, 2023).

The study addresses the need to understand EFL students' perceptions of AI in academic writing, essential for effective AI-enhanced learning adoption (Grassini, 2023; Kaledio et al., 2024; Muluk & Dahliana, 2024). Both Indonesian and Taiwanese students face challenges in mastering English academic writing due to linguistic and educational differences (Lee et al., 2024;

Cadis et al., 2023; Prameswari & Suryani, 2023). By comparing these contexts, the research uncovers cultural and educational influences on AI tool acceptance, offering insights for curriculum development and teaching strategies (Bearman et al., 2023; Fernández-Sánchez et al., 2022; Granić, 2022).

Although the potential of AI in enhancing English language skills has been widely documented, in-depth empirical research on EFL students' perceptions of AI use in academic writing remains scarce, particularly in Indonesia and Taiwan. This study aims to fill the knowledge gap by analyzing EFL students' perceptions in Indonesia and Taiwan regarding AI's role in improving academic writing skills (Bahroun et al., 2023; Bearman et al., 2023; Fernández-Sánchez et al., 2022; Granić, 2022; Zawacki-Richter et al., 2019). The findings will help tailor AI tools to diverse educational needs, enhancing academic performance and learning experiences, and contributing to effective AI integration in education, ensuring it benefits all learners. The research questions guiding this study are:

1. What are the perspectives of English as a Foreign Language (EFL) students in Indonesia and Taiwan about the use of artificial intelligence to improve their English academic writing abilities?
2. What are the advantages and difficulties that EFL students in Indonesia and Taiwan believe are linked to the usage of artificial intelligence for enhancing English academic writing skills?

## **B. Method**

This study employs a qualitative research method to explore EFL students' perspectives on using AI in academic writing. Twenty students, ten from Taiwan (TW) and ten from Indonesia (INA) were selected through purposive sampling (Darwin et al., 2024; Pratama & Hastuti, 2024; Wei, 2023). The purposive sampling method ensures the participants represent the larger population of second-year EFL students using AI tools, providing valuable insights. The criteria included being an EFL student, having used AI, and having taken an academic writing class (Darwin et al., 2024; Pratama & Hastuti, 2024; Wei, 2023).



Table 1. The Participants at one of the State Islamic University in Indonesia

Information	Indonesian EFL Students		Taiwanese EFL Students
	Gender	Male	5
	Female	5	6
English Proficiency	C1	5	5
	B2	5	5
<b>Total</b>		<b>10</b>	<b>10</b>

The participants have diverse educational backgrounds, contributing to a comprehensive understanding of the research topic. Their English skills are at B2 and C1 levels on the CEFR scale, indicating high proficiency for complex academic writing tasks. The researcher chose second-year students, believing that students with a year of academic experience have better vocabulary learning strategies (Darwin et al., 2024; Knott et al., 2022). This selection was based on the idea that more academic engagement leads to a richer vocabulary and deeper comprehension (Chankob & Hdouch, 2024; Rochman & Malik, 2021). Only 20 participants were included, 10 from Indonesia and 10 from Taiwan, to allow for in-depth qualitative analysis. This small sample size ensures a detailed examination of individual perspectives and rich data collection. Selecting participants from two countries adds a comparative dimension, highlighting cultural differences in AI use in academic writing.

Data collection involved semi-structured interviews conducted in English, lasting 7 to 10 minutes each, with students specializing in English at a State Islamic University in Indonesia and a National University in Taiwan. The interviews were audio-recorded and supplemented with detailed notes for precise data collection (Darwin et al., 2024; Malik et al., 2023), focusing on students' attitudes toward AI in academic writing, along with perceived benefits and challenges (Zawacki-Richter et al., 2019; Song & Song, 2023).

Data analysis followed Creswell's qualitative data analysis framework, starting with transcription and organization, followed by manual coding to identify significant themes Creswell, (2014).



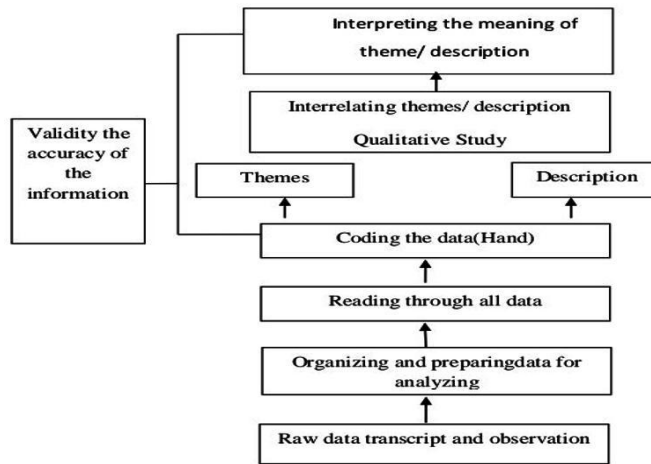


Figure 1. Creswell's flow chart

The study involved a thorough review of transcripts, categorizing them by specific topics (Jnanathapaswi, 2021; Naeem et al., 2023). This process helped identify patterns and themes, leading to a deeper comprehension of the material. Thematic analysis was used to interpret patterns and compare themes across the two groups, offering insights into cultural differences and commonalities in the AI tool (Jnanathapaswi, 2021). Thematic analysis was chosen for its effectiveness in identifying, analyzing, and reporting patterns within data, offering flexibility and detail (Khan, 2014; Maguire & Delahunt, 2017).

### C. Result and Discussion

The results and discussion section compares Indonesian and Taiwanese EFL students' perspectives on using AI in academic writing. It highlights their positive reception of AI tools and their impact on writing skills. Thematic analysis shows that students find AI helpful for improving grammar, formulating sentences, rephrasing material, and generating topics. The section also addresses challenges such as dependency, plagiarism, and potential lethargy. These insights aim to guide educators and policymakers in integrating AI into language education to enhance learning outcomes and foster innovation in EFL education.



## 1. Result

This research explores the perspectives of EFL students from Indonesia and Taiwan on using AI in academic writing. By comparing students from these cultural and educational backgrounds, the study aims to provide insights into the effectiveness, acceptance, and challenges of AI tools in enhancing writing skills. The findings are intended to help educators tailor AI-driven teaching methods to improve learning outcomes and foster innovation in EFL education. Additionally, the results can guide policymakers and curriculum developers in effectively integrating technology into language education to support student success.

### a. EFL students' perspectives on utilizing AI in academic writing

This section compares Indonesian and Taiwanese EFL students' perceptions of using AI in academic writing to understand how different cultural and educational backgrounds affect their views on the effectiveness, acceptance, and challenges of AI tools. These insights can help educators tailor AI-driven teaching methods to meet diverse student needs, enhancing learning outcomes and promoting innovation in EFL education.

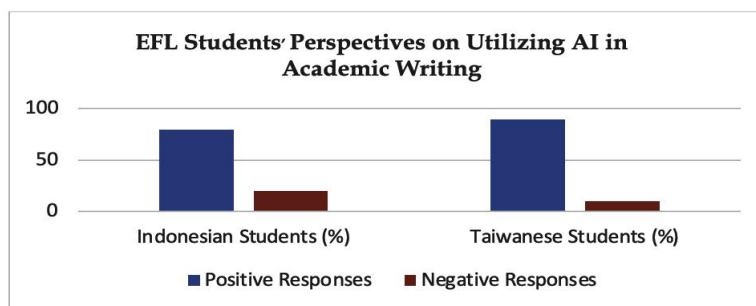


Chart 1. Percentage of positive and negative responses to AI in academic writing by EFL student

The chart shows the positive and negative responses of Indonesian and Taiwanese EFL students to using AI in academic writing. Among Indonesian students, 80% responded positively and 20% negatively, while 90% of Taiwanese students responded positively, with 10% negative responses. This data reflects a favorable perception of AI tools for enhancing writing skills among both groups.





Thematic analysis of interview transcripts revealed that all EFL students viewed AI in academic writing positively. An Indonesian student, INA-PS08, stated,

*"AI greatly assists in enhancing our academic writing by identifying and correcting mistakes, helping us learn and improve".*

Similarly, a Taiwanese student, TW-PST08, commented,

*"AI helps me translate and understand complex academic texts, improving my comprehension and allowing me to discuss more complex ideas in my writing".*

Students use various tools to support their learning, especially in academic settings. Advanced technology like AI provides crucial assistance. Another Indonesian student, INA: PS-01, affirmed,

*"AI greatly aids me in writing my thesis".*

Taiwanese students echoed this view, with TW: PST-01 stating,

*"AI helps me check grammar and spelling in my English papers, making my writing more accurate and confident".*

Most EFL students using AI in their academic writing reported positive experiences. They agreed that AI is invaluable for improving writing abilities. According to INA: PS-09,

*"AI improves my writing skills by suggesting arguments to expand my ideas".*

Taiwanese students shared this sentiment, with TW: PST-09 noting,

*"AI helps me experiment with different writing styles, suggesting various ways to phrase sentences and making my writing more adaptable".*

AI's sophisticated algorithms detect and correct grammatical errors, facilitating progress and enhancing knowledge acquisition. AI is also user-friendly and flexible, allowing use anytime and anywhere. Overall, students believe AI positively influences their academic writing and have a favorable attitude toward its use. Integrating AI into learning effectively assists and promotes writing improvement.



However, some students reported negative responses. An Indonesian student, PS-03, highlighted issues like AI's failure to cite sources, leading to potential plagiarism, and occasional system crashes. Despite these issues, they found AI tools user-friendly. Another Indonesian student, PS-10, noted that AI can foster over-reliance on technology, reducing independent task attempts. Similarly, a Taiwanese student, PST-01, reported AI tools sometimes over-correct writing, making it sound unnatural.

Regarding research question 1, the high percentage of positive responses reveals that EFL students in both Indonesia and Taiwan appreciate AI's value in enhancing their academic writing skills. Interviews provide qualitative data supporting this, as students reported noticeable improvements in grammar, sentence formulation, rephrasing material, and generating topics. This demonstrates a positive attitude towards AI among EFL students in both countries, highlighting its effectiveness in improving academic writing.

b. The perceived advantages of using artificial intelligence in academic writing as reported by EFL students

Thematic analysis of the interview transcripts identifies several perceived advantages of using AI in academic writing among EFL students. These include enhancing grammar skills, aiding sentence formulation, helping with rephrasing, and assisting in finding topics.

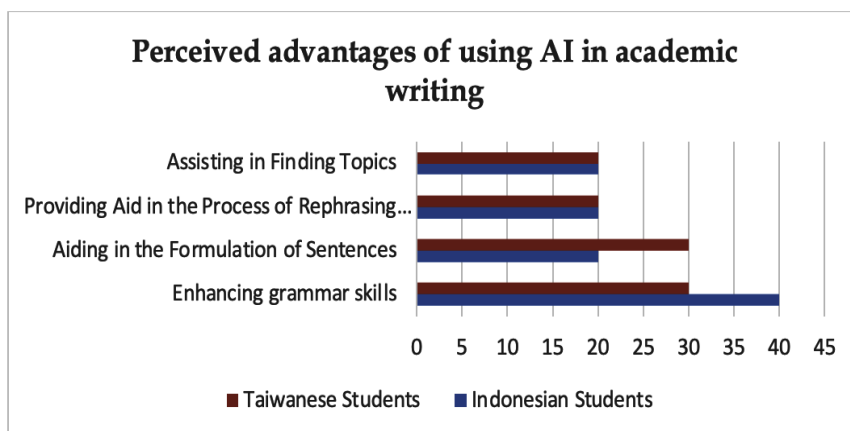


Chart 2. The advantages of using AI in academic writing



The bar chart illustrates the perceived benefits of using artificial intelligence (AI) in academic writing among Indonesian and Taiwanese students across four categories: enhancing grammar skills, aiding sentence formulation, rephrasing material, and finding topics.

Indonesian students found AI tools more beneficial for enhancing grammar skills, with 40% reporting this advantage compared to 30% of Taiwanese students, indicating a higher perceived benefit in grammatical accuracy among Indonesians. Conversely, 30% of Taiwanese students reported greater benefits in aiding sentence formulation, compared to 20% of Indonesians, suggesting that Taiwanese students might rely more on AI for structuring and developing sentences.

Both Indonesian and Taiwanese students equally perceived AI's advantage in rephrasing material, with each group reporting a 20% benefit, indicating a shared perception of AI's utility in this aspect. Similarly, both groups equally valued AI's assistance in finding topics for academic writing, with each also reporting a 20% perceived benefit.

#### 1) Enhancing grammar skills

Proficiency in grammar is crucial for academic writing, especially in English, as students must express their ideas with precision. Today, many resources help English as a Foreign Language (EFL) students enhance their grammar skills, with Artificial Intelligence (AI) being a remarkable tool for improving grammatical accuracy. Indonesian and Taiwanese EFL students shared their thoughts:

*"Yes, I use Artificial Intelligence in my academic writing. For instance, I use Grammarly to correct grammatical errors and QuillBot for paraphrasing. I also use Killbot for enhancing texts. AI helps simplify the process of creating academic papers when I feel my writing is inadequate". (INA: PS-08)*

*"I use AI tools like QuillBot and Grammarly for proofreading. These platforms efficiently identify errors I might miss and suggest better ways to articulate my sentences". (TW: PST-08)*

Interviews revealed that many students find AI beneficial for improving their grammar in academic writing. They highlighted platforms like QuillBot



and Grammarly as essential resources for grammar verification and enhancement. Using these AI tools as writing assistants, students reported significant improvements in the grammatical accuracy of their theses, underscoring AI's valuable contribution to supporting academic endeavors, particularly in enhancing language and grammar skills.

### 2) Aiding in the formulation of sentences

Using AI to generate phrases and paragraphs in English writing can be a valuable asset, but understanding the underlying issue is crucial. AI can help arrange sentences and paragraphs, but it shouldn't replace the development of proficient writing skills and subject comprehension. Each component uniquely affects understanding and cannot be easily replaced by the other.

*"AI helps enhance and broaden our language skills, making our sentences more eloquent". (INA: PS-02)*

EFL students from Taiwan agreed, as one participant said, *"AI is really helpful for expanding my vocabulary and understanding". (Coding: PST-02)*

Interview data show that some participants recognized the benefits of AI in constructing sentences and paragraphs in English writing. Students emphasized AI's role in creating coherent sentences and well-organized paragraphs, which greatly benefited their English learning process. AI enabled them to articulate their views properly. Additionally, students highlighted Grammarly's significant impact, noting its effectiveness in helping learners understand the fundamental structure of English sentences.

### 3) Providing aid in the process of rephrasing material

Proficiency in paraphrasing is essential for authors and students in academic writing. This skill involves rephrasing content from sources like journals or books into one's own words or presenting it uniquely in publications. Mastering paraphrasing is crucial for maintaining ethical writing standards and improving the quality of written work. A strong command of paraphrasing enables writers and students to effectively communicate information and demonstrate a thorough understanding of the subject.

*"Yes, I use Artificial Intelligence in my academic writing. For example, I use Grammarly to automatically correct grammatical errors and Quillbot for paraphrasing texts". (INA: PS-08)*

The PST addressed this topic differently:

*"I use AI tools like QuillBot and Grammarly for proofreading. These applications efficiently spot errors that I might miss and offer better suggestions for phrasing my sentences". (TW: PST-08)*

Research findings show that students believe AI significantly aids in paraphrasing texts, particularly highlighting QuillBot as a widely used tool in academic writing. QuillBot helps students rephrase content without altering its original meaning, allowing for a unique expression that reflects their writing style. This tool is especially beneficial for students seeking to avoid plagiarism and express concepts in their way. QuillBot simplifies paraphrasing and enhances writing skills by encouraging diverse and creative language engagement.

#### 4) Assisting in finding topics

In academic writing, students often struggle with generating ideas and selecting topics. This challenge is heightened when they have limited perspectives on their chosen topics, leading to difficulty in deciding on content direction. Consequently, despite having many ideas, students find it hard to express them effectively, resulting in work that does not meet academic standards. This highlights the need for stronger critical thinking and analytical skills in academic settings.

*"AI offers benefits such as increasing efficiency and improving the accuracy of my academic work. It also provides innovative and creative solutions to my writing" (INA: PS-05)*

The PST provided a similar response, stating:

*"AI helps me translate and understand complex texts, which enhances my comprehension and enables me to discuss more complex ideas in my writing". (TW: PST-08)*



Results show that most participants agreed AI is a vital tool for selecting topics and gathering information for writing tasks. Students noted that AI helps when they struggle with consistency and limited ideas, providing additional resources to improve their work. P4 students found AI particularly useful in thesis preparation for identifying relevant materials and topics. They recognized AI's potential to enhance writing techniques significantly.

Regarding research question 2, the data reveals that while both Indonesian and Taiwanese students acknowledge AI's advantages in academic writing, the perceived benefits differ. Indonesian students value AI for improving grammar skills, indicating a preference for grammatical accuracy. Taiwanese students find AI more helpful for sentence formulation, focusing on writing structure. The similar appreciation for AI's rephrasing and topic-finding functions suggests these features are valued by students from both backgrounds. These insights can guide educators and AI tool developers to better meet the needs of different student groups.

### c. Challenges Perceived by EFL Students in Utilizing AI for Academic Writing

Thematic analysis of the interview transcripts revealed several challenges EFL students face when using AI in academic writing, including plagiarism, dependency, lethargy, and artificial language/ data.

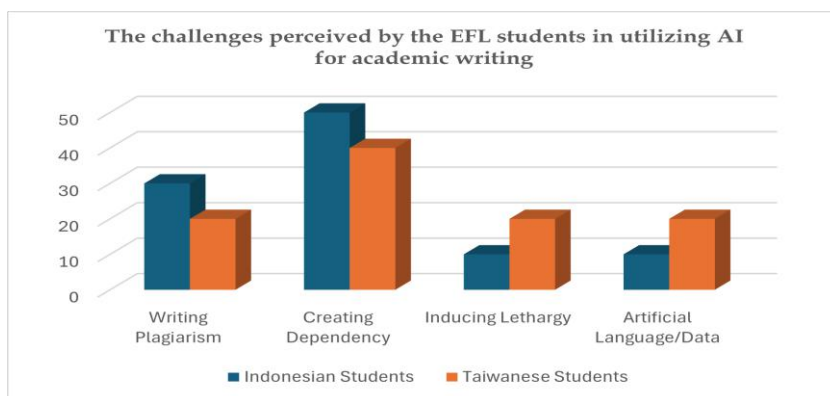


Chart 3. Perceived AI challenges in academic writing

The bar chart illustrates the challenges Indonesian and Taiwanese EFL students face when using artificial intelligence (AI) for academic writing, categorized into four areas: plagiarism, dependency, lethargy, and artificial language/ data.

The data shows that 30% of Indonesian students view plagiarism as a challenge with AI, compared to 20% of Taiwanese students, indicating greater concern among Indonesians. Both groups see dependency as a major issue, with 50% of Indonesian and 40% of Taiwanese students highlighting AI's potential to undermine independent writing skills. Additionally, 10% of Indonesian and 20% of Taiwanese students view lethargy as a challenge, suggesting Taiwanese students worry more about AI reducing motivation or effort. Similarly, 10% of Indonesian and 20% of Taiwanese students are concerned about artificial language or data, indicating a higher concern among Taiwanese students about AI-generated content authenticity.

Overall, both groups express significant concerns about dependency on AI, which could undermine writing autonomy. Indonesian students worry more about plagiarism, while Taiwanese students are more concerned about AI-induced lethargy and authenticity. These insights highlight the need for educators to address these challenges by guiding the ethical and effective use of AI tools in academic writing. Balancing AI support with developing independent writing skills is crucial for a productive learning environment.

In the upcoming session, the researcher will present the interview results for each sub-topic covered in this section.

### 1) Writing plagiarism

The emergence of AI, which relies on internet-derived data, poses significant challenges, especially concerning plagiarism. AI's heavy dependence on online sources for learning can lead to unintentional duplication or resemblance to existing information.



As one Indonesian EFL student noted,

*“I encounter challenges with using AI due to the absence of cited sources, which leads to potential plagiarism”*. (INA: PS-04)

Similarly, a Taiwanese student stated,

*“I face issues with using AI because it doesn’t list sources, raising concerns about possible plagiarism”*. (TW: PST-10).

These statements highlight the need for students to be cautious about plagiarism linked to AI-generated content. It underscores the importance of maintaining academic honesty and using AI as a supplementary tool, not the sole authority. Students must cross-reference and verify AI-generated material to ensure authenticity and credibility, reducing the risk of unintentional plagiarism.

## 2) Creating dependency

The students share similar views on the use of AI in academic writing. One Indonesian student noted,

*“AI allows students to learn and experiment with ease, ultimately leading them to rely on the tools”*. (INA: PS-10)

Similarly, a Taiwanese student said,

*“AI enables students to learn and explore effortlessly, eventually making them dependent on the tools”*. (TW: PST-06)

Both students believe that AI’s simplicity and speed may unintentionally cause reliance, leading to decreased motivation and dependency. They warn against the potential negative effects of excessive reliance on AI technologies in academic tasks.

## 3) Inducing lethargy

The dual nature of technology makes it both a valuable asset and a potential danger, with adverse consequences possible. A negative effect of AI use among students is that it can promote laziness and hinder skill development.





Interview results show unanimous agreement among participants that AI can hurt themselves and their peers. Students must use modern technology skillfully and thoughtfully to avoid becoming complacent and to engage actively in their studies.

One Indonesian EFL student noted,

*"AI could indeed lead to students easily copying and pasting, which might discourage them from exploring further"*. (INA: PS-01)

Similarly, a Taiwanese student observed,

*"A potential drawback is that it might encourage students to simply copy and paste, deterring them from further exploration"*. (TW: PST-07).

Respondents recognize AI's ambivalent nature, stressing the need for wise use. While AI offers benefits in support and productivity, students should be cautious about over-reliance, as it may decrease motivation and hinder skill development. The challenge is to find a balance between leveraging AI's advantages and taking a proactive approach to one's education.

#### 4) Artificial language/ data

The limitations of AI are not due to fundamental flaws but result from its design, as it analyzes aggregated human data and is constrained by the material it is trained on. It is crucial to recognize that AI is a tool, not a human being. Although designed to mimic human cognitive processes, AI cannot fully replicate the complexities of the human mind, highlighting its limitations in providing genuine information and creative thinking.

An Indonesian EFL student noted,

*"Occasionally, the topics are not pertinent to the discussion we seek, highlighting a weakness"*. (INA: PS-04)

Similarly, a Taiwanese student remarked,

*"At times, the topics presented may not align with the specific discussion we are interested in, exposing a notable shortcoming"*. (TW: PST-04)



Both students emphasize the need for critical examination of AI-generated information. They stress that students must recognize AI's limitations, such as its inability to produce original or innovative ideas and develop critical thinking skills to evaluate and filter AI-provided information.

While AI can be a valuable tool, it should complement rather than replace human intelligence. Regarding research question 2, challenges like over-reliance on AI and plagiarism highlight its potential drawbacks in academic writing. These findings are essential for educators to consider when integrating AI tools into curricula to ensure that AI enhances learning without compromising academic integrity or student autonomy.

## **2. Discussion**

The previous section analyzed the data, while this section summarizes the research results of the study questions and compares them with past research findings. This research examines the viewpoints of English as a Foreign Language (EFL) students on integrating Artificial Intelligence (AI) in academic writing. It also analyzes the benefits and challenges students face when using AI for writing assignments. The discussion provides a detailed examination of these advantages and difficulties to clarify their impact on students' perspectives regarding the use of AI in academic writing.

1. The attitudes of EFL students in Indonesia and Taiwan towards the utilization of AI

The research findings indicate that students unanimously recognize AI as a valuable resource for writing (Nazari et al., 2021; Utami et al., 2023). There is a strong consensus favoring AI integration in academic writing due to its positive impact on learning dynamics (Aisyi, 2024; García-Martínez et al., 2023; Nazari et al., 2021; Seo et al., 2021; Slimi, 2023; Utami et al., 2023). AI assists students by identifying structural and grammatical errors, proposing topics, generating ideas, and providing relevant resources (Jiang et al., 2023; Nazari et al., 2021; Marzuki et al., 2023; Masrul et al., 2024;

Owan et al., 2023). This support effectively enhances writing skills (Marleni, 2020; Moses & Mohamad, 2019; Vacalares et al., 2023; Nurkamto et al., 2024).

Recent studies further support these findings. Aljuaid (2024) highlights AI's role in enhancing academic writing through immediate feedback and personalized experiences. Research by Su et al. (2022) and Wright (2021) emphasizes the benefits of automated writing tools, particularly for grammar correction and idea generation (Aisyi, 2024; Khan et al., 2024; Lee et al., 2024). Positive responses reflect students' confidence and efficiency improvements (Khalifa & Albadawy, 2024; Marzuki et al., 2023; Rofiqoh et al., 2022).

Studies by Teng and Wang (2023) and Thi and Nikolov (2022) validate AI's positive impact on writing self-efficacy. Combining AI feedback with teacher input enhances EFL students' skills by providing timely corrections.

To apply these findings, educators and policymakers can integrate AI tools into English curricula (Alharbi, 2023). These tools offer real-time feedback on grammar, structure, and style, systematically improving skills (Ahmad et al., 2023; Khotimah et al., 2024). Projects using AI for research enhance practical application skills (Algerafi et al., 2023). Workshops can help educators integrate AI into teaching (Akgun & Greenhow, 2022). Personalized AI feedback addresses individual needs, while adaptive platforms ensure tailored learning (Gayed et al., 2022; Pusvitasari, 2023).

Pilot programs can test AI tools' effectiveness, with funds allocated for access (Ahmad et al., 2023; Aljuaid, 2024). Feedback channels for educators and students can help AI tools evolve (Tran, 2024). Collaborating with developers to customize AI tools to local curricula makes them more relevant.

Combining AI tools with traditional teaching balances AI's role in drafts and grammar checks while teachers focus on higher-order skills like argumentation (Ahmad et al., 2023; Suryanto et al., 2024). Teachers provide insights and context that AI might miss (Gayed et al., 2022). Incorporating



AI exercises into activities helps students become comfortable with the technology (Akgun & Greenhow, 2022). Assigning various writing tasks ensures AI tool application across types (Aljuaid, 2024), and combining AI and teacher feedback offers comprehensive evaluations (Tran, 2024).

By integrating AI tools, educators and policymakers in Indonesia and Taiwan can significantly enhance students academic writing skills. These steps offer a roadmap for leveraging AI to support personalized learning, improve quality, and boost confidence and efficiency, transforming education to meet digital age needs (Gayed et al., 2022).

## 2. The perceived benefits and challenges associated with the use of AI to improve English academic writing skills

AI enhances students' academic experiences across various domains, improving their capabilities (Domínguez-González et al., 2023; Kaledio et al., 2024b; Kamalov et al., 2023; Slimi, 2023; Tuomi, 2019). AI aligns with students' cognitive capacities and is accessible, making it a vital resource (Zhang & Aslan, 2021; Igbokwe, 2023). AI chatbots advance grammatical abilities, surpassing traditional methods (Kim, 2019; Yetişensoy & Karaduman, 2024). AI also improves academic writing among EFL students, including task completion, citation accuracy, and sentence construction (Pitychoutis, 2024; Setyowati et al., 2023).

Despite these benefits, challenges exist. Over-reliance on AI can lead to outputs lacking variety (Aisiyi, 2024; Malik et al., 2023). Proper attribution is crucial to avoid plagiarism, and AI-generated texts may have linguistic deficiencies (Roe & Perkins, 2022; Malik et al., 2023). AI use in rephrasing without acknowledgment can lead to academic dishonesty (Marzuki et al., 2023).

Interviews with English students confirm AI's utility in writing, improving grammatical accuracy and writing quality (Aisiyi, 2024; Fitria, 2023; Kim, 2019). AI-driven tools help with text structure and enhance conceptual understanding (Amin & Alammar, 2023). AI also positively influences vocabulary development, productivity, and writing effectiveness (Alharbi & Khalil, 2023; Malik et al., 2023; Rafiqqa et al., 2023; Wei, 2023).

However, AI's convenience can lead to laziness, reducing motivation to seek diverse sources (Ahmad et al., 2023; Livberber & Ayvaz, 2023; Nazareno & Schiff, 2021; Theben et al., 2022). Research by Liang (2023) and Morales-García et al. (2024) indicates that AI's rapid task completion can create dependency, requiring careful evaluation of AI's role in education (Grájeda et al., 2024). AI sometimes struggles with natural language processing, delivering irrelevant material (Pellert et al., 2023).

AI can enable plagiarism if used improperly. Ethical use is vital to maintain academic integrity (Foltynek et al., 2023). Incorporating AI tools for real-time feedback can improve writing skills (Ahmad et al., 2023; Alharbi, 2023). Projects using AI can familiarize students with these technologies, and regular workshops for educators are essential (Algerafi et al., 2023; Akgun & Greenhow, 2022). Personalized feedback addresses specific challenges, and adaptive platforms tailor tasks based on performance (Alharbi, 2023; Gayed et al., 2022).

Pilot programs can test AI tools' effectiveness and ensure equitable access through funding (Ahmad et al., 2023; Aljuaid, 2024). Feedback channels can help AI evolve to meet educational needs (Tran, 2024). Combining AI with traditional methods offers a balanced approach, focusing on higher-order skills (Ahmad et al., 2023). AI-supported exercises help students become comfortable with technology (Akgun & Greenhow, 2022).

By strategically integrating AI into the curriculum, educators and policymakers can enhance students' writing skills, making learning more engaging and aligned with digital age needs (Domínguez-González et al., 2023; Kamalov et al., 2023; Slimi, 2023). These steps leverage AI to support personalized learning, improve quality, and boost confidence and efficiency, transforming education (Gayed et al., 2022).

#### **D. Conclusion**

The investigation into EFL students' attitudes toward AI in academic writing, centered around two key research questions, yielded



significant findings. First, the students consistently expressed positive views on integrating AI into their academic activities. This favorable attitude stems from the substantial enhancements AI provides to their writing processes, significantly improving their academic proficiency. This underscores the positive impact of technology on learning outcomes, demonstrating how seamless integration into educational practices can lead to substantial benefits.

In exploring the second research question, the study identified several advantages and challenges associated with AI use in writing. Students highlighted six primary benefits: AI improves grammatical accuracy, aids in sentence construction, supports text paraphrasing, enhances vocabulary, identifies relevant themes, and improves time management. These advantages emphasize AI's comprehensive role as an educational tool, assisting in both the mechanical and cognitive aspects of writing. However, the study also revealed challenges, such as AI fostering dependency, generating non-original content, and increasing plagiarism risks. These issues underscore the need for skillful integration of AI technologies in education to ensure they enhance, rather than hinder, the learning experience.

While these findings provide valuable insights, several limitations must be acknowledged. The sample, comprising Indonesian and Taiwanese students, may not represent the global population, limiting the generalizability of the results. Additionally, the reliance on self-reported data through interviews may introduce bias, potentially leading to inaccurate estimates of AI's benefits and challenges. The study also captures only short-term perceptions, necessitating longitudinal studies to assess the long-term effects of AI on writing proficiency and critical thinking. Moreover, the research did not explore varying levels of access to AI tools or proficiency, which could influence their effectiveness. The educational systems in Indonesia and Taiwan may differ from those in other countries, affecting AI perception and use; thus, comparative studies are needed to identify context-specific factors. Finally, ethical implications, such as



concerns about plagiarism and AI dependency, are noted but not explored in depth. Future research should develop comprehensive guidelines for ethical AI use and address potential risks. Technical limitations and biases in AI tools, such as algorithmic biases, also need to be considered to improve AI applications in education.

In conclusion, while the positive perceptions of AI tools are promising, they may be influenced by the specific sample and context. The challenges identified, particularly regarding dependency and ethical concerns, highlight the need for careful implementation and continuous evaluation of AI tools in educational settings. Acknowledging these limitations is essential for educators and policymakers to fully understand the potential and pitfalls of AI in academic writing instruction, allowing them to develop strategies that leverage the benefits while mitigating the drawbacks. Future research should aim to address these limitations for a more comprehensive understanding of AI's role in education.

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