



AI Tools in Academic Writing: Indonesian EFL Students' PerspectiveAyesha Suhail¹, Condro Nur Alim², Christenelle Valmeo³^{1,2,3} Universitas Muhammadiyah Purwokerto, Central Java, IndonesiaCorresponding author email: ayeshasuhail225@gmail.com

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Abstract

The purpose of this study was to explore Indonesian EFL students' beliefs and challenges regarding the use of Artificial Intelligence (AI) tools in academic English writing. A mixed-methods approach was employed, involving a descriptive survey of 112 students from the English Education Department at Universitas Muhammadiyah Purwokerto and semi-structured interviews. Quantitative data provided an overview of students' AI usage patterns, while qualitative data offered deeper insights into their experiences and perceptions. The findings revealed that students generally held positive attitudes toward AI tools and used them for idea generation, grammar checking, vocabulary enhancement, and text organisation. AI tools were also perceived to increase confidence and reduce writing anxiety, supporting both cognitive and affective aspects of learning. However, participants expressed concerns about overreliance on AI, the accuracy and reliability of AI-generated content, issues of originality, and academic integrity. Importantly, students demonstrated awareness of these limitations and emphasised the need for critical evaluation when using AI. The findings highlight the importance of integrating AI literacy into academic writing instruction and establishing clear institutional guidelines for the ethical and responsible use of AI. Overall, AI should be viewed not as a replacement for learners' efforts but as a supportive tool that can enhance academic writing when used critically and responsibly.

Keywords: Artificial intelligence; Academic writing; EFL students; AI literacy; Academic integrity

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INTRODUCTION

Artificial Intelligence (AI) has been evolving at an unprecedented pace, and this evolution is now affecting how education is practised across fields, especially in language learning and academic writing. Over the past few years, AI tools like ChatGPT, Grammarly, and automated writing assistants have become more prevalent in students, providing them with instant feedback, idea generation, and text editing. These tools are reshaping students' attitudes toward writing and redefining learner support in digital environments. The use of AI tools for writing has been supported by several studies that suggest they can improve writing skills, encourage learner autonomy, and support language learning by providing instant feedback and assistance (Chen & Zou, 2023; Li, 2023; Bai & Guo, 2022). Consequently, AI is now increasingly becoming a part of modern English as a Foreign Language (EFL) education. Yet despite these developments, academic writing remains a complex and challenging task for many EFL learners, especially when learning to write in Indonesia. While students are expected to be able to create structured, coherent, and linguistically correct texts, they are also expected to engage in higher-order thinking, in this case, argumentation and

critical analysis. Errors in grammar, vocabulary, coherence, and organisation have consistently been reported as problems by Indonesian EFL learners (Aghajani & Amanzadeh, 2017). The challenges may result in low confidence, higher anxiety when writing, and lower participation in academic writing tasks. In this context, AI tools have come to the fore as potential means to help learners overcome these challenges by alleviating cognitive load and supporting linguistic accuracy and text structure (Kessler, 2022; Link et al., 2022). The use of AI in academic writing can be analysed from a theoretical perspective through the lens of sociocultural learning theory, which highlights the importance of mediation, interaction, and tools in learners' cognitive development. Lev Vygotsky (1978) has argued that learning is socially mediated and is done by using tools and artifacts as scaffolding mechanisms in the Zone of Proximal Development (ZPD) of the learner. In this regard, AI tools can be understood as digital mediational tools that guide and support learners in the writing process, enhancing their ability.

Importantly, these tools don't replace the learning process, but can help learners complete tasks that they may not be able to do at this time. Furthermore, in the context of constructivist learning theory, which emphasises the role of learners in building knowledge by engaging with tools and environments, AI can support iterative learning by providing feedback and revisions to improve students' writing over time (Panadero, 2017). While these will be useful, there are also pedagogical and ethical concerns about the use of AI tools in academic writing that need to be taken into account. Some studies have emphasised the potential for students to lose their ability to think critically and write independently when they rely on AI-generated content (Perkins, 2023). In addition, the AI's output might not be accurate, contextually suited, or academically expected, and the user must evaluate and edit the AI-generated content (Cheng, 2004). Plagiarism and the ambiguities surrounding the acceptable use of AI in academic tasks are also prevalent topics in the literature (Cotton et al., 2024; Pratiwi & Nugroho, 2023). These are just some of the concerns raised about the use of AI tools, underscoring the need for responsible use and awareness of their limitations. While some research has examined the application of artificial intelligence (AI) tools in academic writing, many studies have focused on how AI can improve linguistic accuracy and writing performance more broadly. For instance, in EFL settings, these studies have mostly depicted AI as a supportive or corrective tool, rather than focusing on how learners interact with, interpret, and regulate its use during the writing process.

Moreover, past studies have tended to use single-method designs, such as surveys or experiments, that do not afford an in-depth understanding of the complex interactions between students' beliefs, practices, and perceived challenges. Therefore, a deeper understanding of the functioning of AI tools in the cognitive and affective dimension of learners' academic writing experiences is still needed, especially in contexts that have not been explored, such as in Indonesian higher education. Based on the aforementioned problems, the present study adopts a mixed-methods approach to explore the beliefs, practices, and problems encountered by Indonesian EFL learners in using AI tools for academic English writing. This study combines descriptive survey data with in-depth, qualitative data to delve deeper into the ways in which students are using AI as a mediational tool to assist with their idea development, language polishing, and self-regulation. The study sheds light on the intricate and context-specific aspects of AI use, showcasing its potential benefits and the accompanying challenges, including reliance, accuracy issues, and ethical uncertainties. This integrative approach is a novel contribution since it presents a more comprehensive and empirically-based description of AI-supported writing as a learning process that is dynamic and reflective in the context of Indonesian EFL writing. Given these factors, the purpose of this study is to explore Indonesian EFL students' beliefs, practices, and challenges regarding the use of AI tools in academic English writing.

Literature Review

Artificial Intelligence in Education

The idea of Artificial Intelligence (AI) has become a major topic in shaping how education works today, providing new ways to teach, give feedback, and help students learn. AI is usually described as computer systems that can perform tasks humans typically do, such as understanding language, recognising

patterns, and making decisions (Russell & Norvig, 2021). In schools and colleges, AI is being used in many ways, like systems that grade written work automatically, tutoring tools that provide personalised help, dashboards that predict student performance, learning programs that adjust to each student's needs, and chatbots that can talk and assist. (Zawacki-Richter et al., 2019) These changes show that AI is being used in more areas, but most studies focus on what AI can do rather than on how it affects people's learning and their ability to take control of their own learning. A lot of research shows that AI helps make learning more personalised. Adaptive systems are designed to analyse learners' behaviour and adjust the teaching material to fit each person's skill level, learning speed, and preferences (Holmes et al., 2019). This matches teaching methods that focus on personalised learning paths for each student.

However, some experts have raised questions about how much real learning occurs through this kind of personalisation, because the system's adjustments might prioritise quick and easy over helping people think deeply and learn effectively. Similarly, even though AI is often seen as a tool that makes teaching more efficient, especially through automatic grading and data-driven insights (Luckin, 2018), this view usually overlooks how it might reduce complex learning processes to numbers and measurements. Because of this, people are still arguing about whether using AI to make things more efficient helps or limits how deeply teaching can happen. Another commonly recognised advantage of AI in education is its ability to offer quick and ongoing feedback. Instant feedback helps students learn step by step, so they can improve their work, become more aware of their own thinking, and take control of their learning (Panadero, 2017; Kessler, 2022). In English language learning situations, this type of feedback helps students become more aware of language rules and take more control of their own learning. It enables them to identify and correct their own mistakes (Yunita & Santosa, 2020). Still, people are not sure how effective automated feedback really is. Some research shows that AI feedback may not grasp the bigger picture and may miss important aspects of writing, such as making strong arguments and thinking critically. This makes us wonder whether

AI mainly helps with basic grammar and word choice rather than with more important aspects of improving academic writing. Even though AI has some good teaching benefits, more and more studies are looking closely at the ethical and educational issues that come with using AI. Issues like data privacy, unfairness in algorithms, and lack of transparency have been talked about a lot in research (Williamson & Eynon, 2020). Also, there is a major problem with overreliance on AI-generated content. Researchers are concerned that overreliance on automated systems could prevent people from developing their own thinking and writing abilities. Some scholars argue that using AI in learning settings may reduce opportunities for interaction, which could weaken emotional connections and make it harder for students to collaborate to build knowledge (Chou & Chan, 2021). These comments show that we need to stop focusing only on the positive sides of AI and instead look at both the good and the challenges it brings to education. In Southeast Asia, especially in Indonesia, more and more universities are starting to use AI in teaching, testing, and managing their schools, according to Tang et al 2023.

Even though more schools and organisations are using AI, there isn't much research examining how students actually think about and engage with AI in their own learning. Much of the current research focuses on what systems can do or how institutions view things, but it doesn't pay enough attention to how students feel, what worries them, or how they think carefully about the AI tools they use. This gap shows that there is a need for more studies that take into account the specific situations learners are in and focus on their needs. These studies should examine both the advantages of AI and the problems, difficulties, and ethical issues that arise from its use. Collectively, the existing literature suggests that AI has the potential to transform educational practices by providing personalised learning experiences, immediate feedback, and increased access to learning resources. These benefits indicate that AI can support both teaching and learning processes across different educational contexts. However, scholars also caution that the effectiveness of AI depends on how it is implemented and how learners engage with it. Therefore, AI should be viewed not simply as a technological innovation, but as a pedagogical tool whose impact is shaped by educational practices and learner behaviour.

Artificial Intelligence and Second Language Acquisition

Artificial Intelligence (AI) has increasingly been recognised as a transformative force in the field of second language acquisition (SLA), reshaping how learners access input, engage in interaction, and develop linguistic competence. Classical SLA theories emphasise several key processes that contribute to effective language learning, including comprehensible input (Krashen, 1985), interaction and negotiation of meaning (Long, 1996), output production (Swain, 1995), and the noticing of linguistic forms (Schmidt, 1990). Recent research suggests that AI-powered tools can support these processes by creating adaptive learning environments, providing personalised instruction, and delivering immediate feedback (Chen & Zou, 2023). Nevertheless, despite its growing potential, the effectiveness of AI in supporting language learning remains a topic of ongoing discussion. One of the most widely discussed contributions of AI to second language learning is its ability to provide personalised and comprehensible input. Applications such as Duolingo, ELSA Speak, and Rosetta Stone employ adaptive algorithms that adjust instructional content according to learners' proficiency levels, learning pace, and performance (Lin & He, 2023). This personalisation aligns with Krashen's (1985) Input Hypothesis, which suggests that learners benefit most from language input that is slightly beyond their current level of competence ($i+1$).

However, some researchers argue that algorithmically simplified input may limit learners' exposure to authentic and linguistically complex language. As a result, questions remain about how AI can balance accessibility with the provision of rich, meaningful language experiences. AI technologies also facilitate interaction, a central component of interactionist perspectives on second language acquisition. Conversational agents and AI-powered chatbots simulate communicative exchanges through natural language processing, enabling learners to practice asking questions, responding to prompts, and negotiating meaning in a low-anxiety environment (Long, 1996). Such tools may be particularly beneficial for learners who experience communication anxiety, as they provide opportunities for language practice without the social pressures often associated with face-to-face interaction (Ariyanti, 2017). However, concerns have been raised regarding the quality of AI-mediated interaction. Unlike human interlocutors, AI systems may offer less varied responses, limited contextual understanding, and reduced opportunities for authentic communicative negotiation.

Therefore, while AI can increase opportunities for interaction, it may not fully replicate the complexity of human communication that contributes to deeper language development. Another significant contribution of AI to language learning lies in its capacity to provide immediate and detailed feedback, which is closely related to Schmidt's (1990) Noticing Hypothesis. Tools such as Grammarly, Write & Improve, and ChatGPT can identify errors in grammar, vocabulary, and sentence structure while offering corrective suggestions. Research suggests that such feedback can enhance learners' language awareness and support autonomous learning (Bai & Guo, 2022; Sipayung et al., 2025). Despite these advantages, concerns remain regarding the reliability and scope of AI-generated feedback. Automated systems often prioritise surface-level linguistic features while paying less attention to higher-order aspects of communication, such as coherence, argumentation, and contextual appropriateness. This limitation raises questions about whether AI feedback promotes deeper language development or primarily improves linguistic accuracy. Beyond providing input and feedback, AI increasingly supports language output and cognitive development. Generative AI tools can assist learners in generating ideas, organising content, and producing initial drafts, thereby reducing the cognitive demands associated with writing tasks (Chen & Kessler, 2020). This function also relates to Swain's (1995) Output Hypothesis, which emphasises the role of language production in language development. From a sociocultural perspective, AI can function as a mediational tool that supports learners within their Zone of Proximal Development (Vygotsky, 1978). At the same time, this scaffolding function creates an important tension.

While AI may facilitate idea generation and task completion, excessive dependence on AI-generated support may reduce opportunities for learners to engage in independent problem-solving and deeper language processing. This tension highlights the need to distinguish between productive scaffolding and overreliance on technological assistance. Despite its considerable pedagogical potential, the integration of AI into second language learning is accompanied by several challenges. Research has highlighted concerns regarding the accuracy and depth of AI-generated feedback, particularly for learners who may lack the linguistic knowledge necessary to critically evaluate automated suggestions (Kessler, 2022). In

addition, AI systems often struggle to address cultural nuances, pragmatic competence, and context-specific language use, which are essential components of communicative competence. Excessive reliance on AI may also limit opportunities for independent language production and critical reflection, potentially affecting learners' long-term development (Zou & Xie, 2023). Collectively, these concerns suggest that AI should be integrated as a pedagogical support rather than a replacement for human instruction. In EFL contexts such as Indonesia, its effectiveness is further influenced by factors including access to technology, digital literacy, and institutional support. Therefore, the educational value of AI depends not only on the technology itself but also on how learners critically engage with and regulate its use within the broader language learning process. Taken together, the literature suggests that AI offers substantial opportunities for supporting second language acquisition; however, its effectiveness ultimately depends on how it is pedagogically integrated and critically used by learners. This complexity highlights the importance of examining students' perceptions and experiences of AI use in specific EFL contexts.

AI-Assisted Academic Writing

Artificial Intelligence has significantly changed the way people plan, write, review, and check their academic writing. For students studying English as a foreign language at the university level, academic writing requires accuracy in their language, clarity and coherence in their ideas, adherence to the rules of their subject area, and critical thinking. AI writing tools like Grammarly, QuillBot, ChatGPT, and Google Bard are becoming increasingly popular for addressing these needs. They offer instant feedback, help rewrite text, and can generate new content (Link et al., 2022). While these tools are often seen as ways to work faster, their impact on how we think about and teach writing needs to be examined more carefully. From a sociocultural perspective, AI tools can be seen as a means for students to improve their writing skills. AI systems use tools such as automated feedback and suggestions to improve work and help learners grow. These tools act like support structures that guide students within their Zone of Proximal Development, as described by Vygotsky in 1978. For example, Automated Writing Evaluation systems provide feedback on grammar, word choice, the way ideas are connected, and how well arguments are organised, helping students identify and address areas for improvement (Chen & Kessler, 2020). This process shows how guided participation works, where learners slowly take in knowledge by working with helpful tools and interacting with them.

There is debate about how much AI actually helps with internalising information. If students just follow AI suggestions without thinking carefully, the support provided might not be very helpful, which can stop them from developing their thinking skills more deeply. From a constructivist point of view, using AI tools to support writing can help people learn through repeated practice and take more control over their learning. Immediate feedback helps learners improve their writing right away, encouraging them to actively build knowledge and become more aware of their own thinking processes (Barrot, 2023). This aligns with the belief that students build their knowledge through engagement and reflection on what they learn. In English language learning situations, where it's hard to get expert advice, AI can be a helpful tool that supports students in learning on their own (Anandari, 2015). Nevertheless, the educational value of AI-assisted learning is contingent upon learners' capacity to critically assess and interpret AI-generated information. In the absence of sufficient digital literacy, students may rely excessively on automated recommendations, which could hinder the development of critical thinking, learner autonomy, and independent decision-making skills. Research has shown that using AI to help with writing offers many advantages.

AI tools help make writing more accurate, broaden the range of words used, and improve text flow by offering automatic suggestions and edits (Link et al., 2022; Chen & Kessler, 2020; Barrot, 2023). Besides that, they can help learners feel more confident and eager to keep trying by providing quick, encouraging feedback. This feedback motivates them to improve their writing and remain interested in writing tasks (Jeon, 2022; Chiu, 2023). These features show that AI can help improve basic writing skills and streamline the writing process. Yet a major problem with current studies is that they often assume that better text results indicate better writing skills. This idea ignores the chance that students might write better texts with help from AI, even if they don't improve their basic writing skills. Besides helping with teaching, using AI

in academic writing raises major ethical and cognitive issues. Using tools like QuillBot too much might lead to easy paraphrasing rather than genuine thinking and the generation of new ideas, which could undermine critical thinking and originality (Perkins, 2023). Also, feedback made by AI isn't always correct or aware of the situation, and it can result in wrong or strange language if used without careful thought (Kessler, 2022). These challenges are especially noticeable for learners with limited skills or knowledge in using digital tools, as they might find it hard to assess whether AI suggestions are reliable (Tang et al., 2023). Also, the growing use of AI tools has made people more worried about keeping academic honesty. AI tools that help with rewriting and creating text can make it hard to distinguish between genuine help and copying someone else's work, especially when students use these tools extensively without proper credit (Perkins, 2023). In response, schools and universities, including those in Indonesia, have begun developing guidelines for responsible AI use.

These guidelines stress the importance of being open and honest, giving proper credit, and acting in an ethical way (Pratiwi & Nugroho, 2023). However, how well these policies work often depends on how much students know and understand about ethical AI practices, which is not well studied in many EFL settings. It's also important to note that the extent to which AI helps with writing depends on factors such as how easy it is to access the technology, how much support schools or organisations offer, and how skilled students are at using digital tools. In Indonesia, differences in how easy it is to get technology and how much people know about AI tools can affect how students use these systems. Even though more and more students are using AI for their writing, most of the research so far talks about the practical advantages of AI. There isn't much discussion about how students think about and decide to use AI in their own writing. This shows that there is a need for research that takes context into account, looking not just at what AI tools can do, but also how students use, understand, and control these tools in actual classroom situations.

Indonesian EFL Students' Beliefs and Challenges Regarding AI Tools

Indonesian EFL students often encounter challenges in academic writing, particularly in expressing complex ideas, maintaining coherence, and using appropriate academic language. These difficulties are commonly associated with limited exposure to English, insufficient vocabulary, and a lack of familiarity with academic writing conventions (Rahman & Lestari, 2023). To address these challenges, an increasing number of students have begun incorporating AI tools into their writing practices. Applications such as Grammarly, Turnitin, and ChatGPT are widely used in higher education to assist with idea generation, language improvement, and writing organization (Aunurrahman et al., 2017; Barrot, 2023). While these tools provide practical support, their influence on students' learning processes and writing development varies depending on how they are used.

From a sociocultural perspective, AI tools can be viewed as mediational resources that support learning and cognitive development. Learners do not simply use AI tools mechanically; rather, they actively interpret, evaluate, and regulate their use in line with their goals, experiences, and learning contexts. Research indicates that Indonesian EFL students generally hold positive attitudes toward AI-assisted writing. Many perceive AI as helpful for improving writing efficiency, enhancing linguistic accuracy, and reducing writing anxiety (Pratiwi, 2024; Utami, 2023). The availability of immediate feedback and language support may increase learners' confidence during the writing process, reflecting the concept of scaffolding within Vygotsky's (1978) Zone of Proximal Development. However, these positive perceptions are often driven by practical considerations, with AI frequently viewed as a tool for completing tasks more efficiently rather than as a resource for deeper learning and skill development. Despite these benefits, students are increasingly aware of the limitations and risks associated with AI use. One commonly reported concern is that excessive reliance on automated corrections may reduce learners' opportunities to develop grammatical awareness and independent problem-solving skills (Butarbutar, 2024).

In addition, AI-generated texts are sometimes perceived as overly formal, mechanical, or lacking a personal voice, raising questions about authenticity in academic writing (Wahyuningsih, 2024). These concerns reflect an important tension between writing efficiency and the preservation of learners' individual writing identities. Ethical considerations further complicate students' engagement with AI tools. Although many learners recognise that the inappropriate use of AI-generated content may constitute academic

misconduct, uncertainty remains about the boundaries of acceptable use (Chen & Gong, 2025). The absence of clear and consistent institutional guidelines often leaves students relying on their own judgment when making decisions about paraphrasing, citation, and authorship. Consequently, students frequently experience uncertainty when balancing the benefits of AI with expectations of academic integrity. These challenges suggest that ethical AI use depends not only on institutional policies but also on learners' awareness, values, and decision-making processes. The effective use of AI is also influenced by technological and contextual factors. Students with limited digital literacy may struggle to evaluate AI-generated feedback or use advanced features effectively (Rahmawati, 2023). Furthermore, unequal access to reliable internet connections and premium AI services may create disparities in learning opportunities (Hidayat, 2023).

These challenges indicate that access to technology alone does not guarantee meaningful educational outcomes. Institutional and instructional support play a crucial role in shaping students' experiences with AI. Studies suggest that when educators integrate AI into writing instruction and provide guidance on its responsible use, students are more likely to develop critical thinking and reflective learning practices (Sari, 2023). Conversely, unstructured use of AI may encourage dependence on automated responses without fostering a deeper understanding of their limitations (Pratiwi & Nugroho, 2023). Therefore, AI should be integrated as a pedagogical tool that supports both academic writing and learner development. Overall, existing studies suggest that Indonesian EFL students hold generally positive yet increasingly critical views toward AI tools. While students appreciate the benefits of AI in improving efficiency, language accuracy, and writing confidence, they also recognize concerns about academic integrity, overreliance, and independent learning. However, much of the existing research has relied primarily on survey-based and descriptive approaches, providing limited insight into how students experience and negotiate these opportunities and challenges in authentic academic contexts. Consequently, further research that combines quantitative and qualitative perspectives is needed to deepen the understanding of Indonesian EFL students' beliefs and challenges regarding the use of AI tools in academic writing.

Summary of the Literature Review

The reviewed literature indicates that Artificial Intelligence (AI) has become an increasingly important component of language learning and academic writing. Previous studies have demonstrated that AI tools can support learners in various aspects of writing, including grammar accuracy, vocabulary development, idea generation, and text organisation (Chen & Zou, 2023; Holmes et al., 2019). From a theoretical perspective, these functions align with sociocultural and constructivist views of learning, which emphasise the role of mediational tools in supporting cognitive development (Vygotsky, 1978). In this regard, AI can be understood as a form of scaffolding that assists learners within their Zone of Proximal Development by providing timely feedback, guidance, and opportunities for revision. Despite these potential benefits, the literature presents contrasting perspectives regarding the educational impact of AI-assisted writing. While many studies report that AI can enhance writing quality, increase learning efficiency, and improve learner confidence, others raise concerns about overreliance on technology, reduced critical engagement, and challenges related to originality and academic integrity (Perkins, 2023; Zou & Xie, 2024).

These contrasting findings suggest that the effectiveness of AI is determined not solely by its technological capabilities but also by how learners use and interpret AI-generated support in specific educational contexts. Consequently, the value of AI-assisted writing depends not only on the availability of technological tools but also on learners' critical awareness and ability to engage with them responsibly. The literature further suggests that students often experience uncertainty regarding the ethical use of AI, particularly in contexts where institutional policies and instructional guidance remain limited. Although existing studies have examined either the effectiveness of AI tools or students' general perceptions of AI, relatively few have explored how learners navigate the benefits, challenges, and ethical considerations of AI-assisted writing. This limitation is particularly evident in underrepresented contexts such as Indonesian

EFL education, where social, cultural, and institutional factors may shape students’ experiences with AI in unique ways.

Furthermore, research in this area remains fragmented. Many studies focus primarily on patterns of AI use or attitudes toward AI, while fewer investigations provide a comprehensive understanding of how students perceive, evaluate, and regulate their use of AI throughout the writing process. As a result, important aspects of learners’ experiences, including their beliefs, challenges, and ethical concerns, remain insufficiently understood. To address these gaps, the present study employs a mixed-method approach to investigate Indonesian EFL students’ beliefs and challenges regarding the use of AI tools in academic writing. By integrating quantitative findings with qualitative insights, the study seeks to provide a more comprehensive and context-sensitive understanding of how students engage with AI in their writing practices. In doing so, it contributes to the growing body of research on AI-assisted learning by offering a deeper examination of students’ experiences within the Indonesian EFL context.

To provide a clearer overview of these findings, the major themes identified in previous studies are summarised in Table 1.

Table 1. Summary of Literature on AI in EFL Academic Writing

Theme	Key References	Main Focus	Summary of Findings
EFL Academic Writing Challenges	Mukminin et al. (2019); Ariyanti (2017); Cheng (2004)	Difficulties in academic writing and writing anxiety	Indonesian EFL students commonly face challenges in grammar, vocabulary,
			coherence, and expressing complex ideas in English
AI in Education and Language Learning	Zawacki-Richter (2019); Holmes, Bialik, & Fadel (2019); Chen & Zou (2023); Adiguzel, Kaya, & Cansu (2023)	Role of AI in learning	AI supports personalized learning, adaptive input, and interactive language development.
AI as Writing Support Tool	Li & Hegelheimer (2013); Panadero, (2017); Lukin (2018); Kessler (2022)	AI in academic writing	AI tools improve grammar accuracy, vocabulary development, organization, and overall writing quality.

Theme	Key References	Main Focus	Summary of Findings
EFL Academic Writing Challenges	Mukminin et al. (2019); Ariyanti (2017); Cheng (2004)	Difficulties in academic writing and writing anxiety	Indonesian EFL students commonly face challenges in grammar, vocabulary,
Feedback and Learner Development	Cheng (2004); Ariyanti (2017); Kawinkoonlasate (2021)	Affective factors in language learning and writing	AI-generated feedback promotes self-regulated learning, metalinguistic awareness, and learner autonomy
Motivation and Confidence		Affective factors	AI tools increase motivation, reduce writing anxiety, and enhance confidence in academic writing.
Challenges and Limitations of AI	Williamson, B., & Eynon, R. (2020); Hajimaghsoodi & Maftoon (2020); Zou & Xie (2024)	Technical and cognitive issues	AI tools may provide inaccurate feedback and lead to overdependence, reducing critical thinking.
Ethical Concerns and Academic Integrity	Holmes, Bialik, & Fadel (2019); Perkins (2023); Lim, Gottipati, & Cheong (2023)	Ethics in AI use	AI raises concerns about plagiarism, authorship, and misuse, requiring ethical guidelines.
Digital Literacy and Access	Lim, Gottipati, & Cheong (2023); Hidayat & Sujarwati (2024); Luckin (2018)	Technology access and skills	Limited digital literacy and unequal
			access affects effective use of AI tools.

RESEARCH METHODS

Research Design

This chapter presents the methodological framework employed to investigate how Indonesian EFL learners perceive and utilise AI writing tools in academic writing. It outlines the research design, participant selection, data collection instruments, and analytical procedures used in the study. This study adopts a mixed-methods approach, combining a descriptive survey with qualitative semi-structured interviews. The quantitative component provides a broad overview of students' use of AI tools and their general perceptions, while the qualitative component offers deeper insights into their beliefs, experiences, and challenges. The integration of both approaches enables a more comprehensive and nuanced understanding of Indonesian EFL students' engagement with AI-assisted academic writing. The study was conducted with undergraduate students from the English Education Department at Universitas Muhammadiyah Purwokerto. A total of 112 students participated in the survey, generating quantitative data to capture general trends and patterns in AI usage. In addition, a subset of participants was involved in semi-structured interviews to explore their perspectives in greater depth. The survey findings were used to support and complement the qualitative data obtained from the interviews. This triangulation of data sources enhances the validity of the findings and provides a more robust understanding of students' beliefs, practices, and challenges related to AI-assisted writing.

Research Participants

This study involved two groups of participants. The quantitative phase included 112 undergraduate students from the English Education Department at Universitas Muhammadiyah Purwokerto who had experience using AI tools in academic writing. Among the survey participants, approximately 75 were female, and 37 were male. The participants reported varying levels of experience using AI tools, with most indicating that they used AI-assisted writing tools often or very often for academic writing tasks. These participants completed an online questionnaire designed to explore their patterns of AI use, perceptions of AI-assisted writing, and challenges encountered during academic writing tasks. For the qualitative phase, 12 participants were selected from the survey respondents for semi-structured interviews. Purposive sampling was employed to select participants who had prior experience using AI tools such as ChatGPT, Grammarly, and Quill Bot in academic writing activities. Among the interview participants, eight were female, and four were male. In terms of academic background, five participants were in the fourth semester of the Bachelor of English Education program, and seven were in the seventh semester. The participants represented different levels of AI use, ranging from occasional to frequent users, allowing the researcher to capture diverse perspectives on the benefits and challenges of AI-assisted writing. This sampling strategy enabled the researcher to obtain rich and relevant information from individuals who were familiar with the phenomenon under investigation. Data collection continued until sufficient information was obtained and no substantially new themes emerged from the interviews. Participation in both phases of the study was voluntary, and informed consent was obtained from all participants prior to data collection.

Instruments

Data were collected through a structured questionnaire administered via Google Forms and semi-structured interviews. The questionnaire consisted of four sections totalling 25 items. The first section included six demographic questions that gathered information regarding participants' age, gender, year of study, field of study, and university affiliation. The second section focused on students' experiences with AI writing tools, including their frequency of use, primary purposes for using them, and the AI applications most commonly used in academic writing. The third section consisted of nine closed-ended questions designed to explore students' attitudes toward AI writing tools. These items addressed both the perceived benefits and challenges of AI-assisted writing, including improvements in grammar and vocabulary, increased confidence, improved organisation of ideas, improved writing quality, critical thinking, plagiarism concerns, institutional support, and the need for guidance on AI use. Responses were measured using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The final section

contained open-ended questions that allowed participants to share their experiences, perceived benefits, challenges, and suggestions regarding the use of AI tools in academic writing. The researcher designed the questionnaire based on the study's objectives and the literature on AI-assisted writing and technology use in language learning.

The questionnaire was reviewed by the research supervisor to establish content validity. The review focused on the clarity, relevance, and alignment of the questionnaire items with the study objectives and research questions. Based on the feedback received, several revisions were made to improve the wording of the items and the instrument's overall clarity of the instrument. In addition, the questionnaire was pilot-tested with a small group of students who shared characteristics similar to those of the target participants. The pilot test was conducted to ensure that the items were clear, understandable, and appropriate for the intended respondents. Feedback from the pilot participants was used to make minor revisions before the questionnaire was distributed for the main study. The quantitative component of the study was intended to provide a descriptive overview of students' AI use, beliefs, and challenges within the specific institutional context. Therefore, the questionnaire was not developed as a standardised psychometric instrument for broad generalisation but rather as a descriptive tool that informed and complemented the qualitative phase of the study.

Data Analysis

Following data collection, both quantitative and qualitative data were systematically analysed. The quantitative survey data were analysed using descriptive statistics to examine students' use of AI tools, perceived benefits, and encountered challenges. The results were presented in tables and supported by descriptive explanations. Percentage frequencies were calculated for categorical variables to identify patterns of AI usage, while mean scores (M) were computed for Likert-scale items measuring students' beliefs and challenges. All quantitative analyses were conducted using Microsoft Excel. The qualitative data obtained from semi-structured interviews were analysed using inductive thematic analysis. This process involved several stages: repeated reading of the interview transcripts to achieve data familiarisation, initial coding to identify meaningful units, and the grouping of codes into broader themes. These themes were then reviewed, refined, and aligned with the research objectives to ensure coherence and relevance. This approach enabled the identification of patterns grounded in participants' experiences, providing deeper insights into their beliefs and challenges in using AI for academic writing. To enhance the rigour of the qualitative analysis, several strategies were employed. The primary researcher conducted multiple rounds of coding to ensure consistency and minimize interpretive bias. A peer debriefing process was carried out, in which an external educational researcher reviewed the coding scheme, thematic structure, and selected transcript excerpts to validate the findings. Additionally, a transparent audit trail of analytical decisions was maintained to ensure dependability and confirmability. In the final stage, quantitative and qualitative findings were integrated. Survey results were used to identify general trends, while interview data were used to explain, elaborate, and contextualize these patterns. This integration provided a more comprehensive and holistic understanding of students' experiences with AI-assisted academic writing.

RESULTS AND DISCUSSION

Results

The findings of this study are derived from two complementary sources of data: survey responses from 112 students, which provide a broad overview of patterns in AI tool usage, and in-depth interviews with 12 participants, which offer detailed insight into students' experiences, perceptions, and concerns. The integration of these datasets enables a more nuanced understanding of how AI tools are not only used but also interpreted and negotiated by students within the context of academic English writing. Survey results illustrate that students engage with a range of AI tools, with a clear preference for multifunctional platforms that integrate idea generation, language correction, and text refinement (see Figure 1). While this trend

reflects a general inclination toward efficiency and convenience, the interview results show a more complex rationale behind these preferences.

Participants consistently described AI tools as “all-in-one” solutions that simplify the writing process and that they used simultaneously. Furthermore, while platforms like ChatGPT dominated student workflows, several respondents noted they had also used both Gemini and Claude. Overall, the results show that the majority of participants preferred to use ChatGPT for academic writing. As one participant noted, *“I mostly use AI because it helps me think of ideas and fix my sentences at the same time.”* This finding provides evidence that students value not only the functional capabilities of AI tools but also their ability to streamline the cognitive demands of academic writing, particularly in a second-language context. Also, one participant stated, *“To me, the first tool introduced was ChatGPT. Till now, most of the time I prefer to use that to get guidance in writing”*.

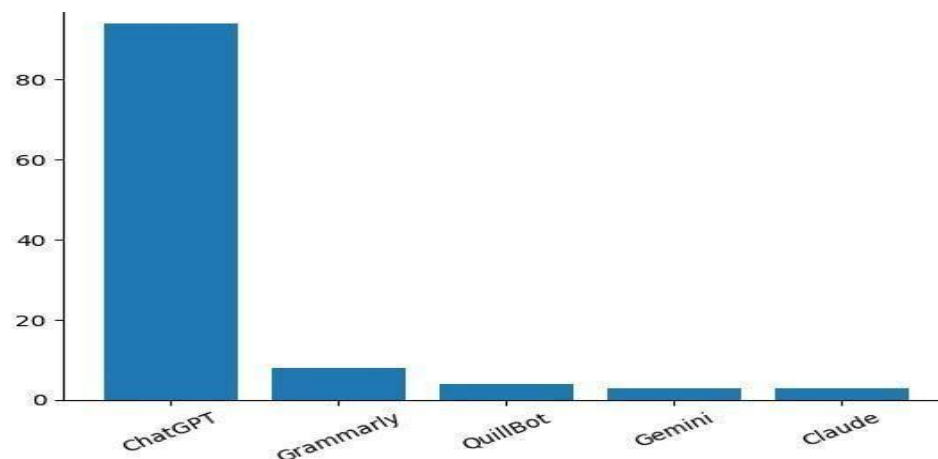


Figure 1. Distribution of AI Tools Used by Students (N=112)

The distribution of the AI tools mentioned by the respondents (N = 112) is shown in Figure 1. ChatGPT was the most commonly reported AI tool, with 94 students (83.9%) reporting use. The remaining 8 students (7.1%) used Grammarly, and 4 students (3.6%) used Quill Bot. Three students (2.7%) used each of Gemini and Claude. Three students (2.7%) used both Gemini and Claude. Overall, the results show that the majority of participants preferred to use ChatGPT for academic writing.

The role of AI tools in supporting the writing process emerges as a central and recurring theme across both datasets. Survey findings indicate frequent use of AI tools (see Figure 2), suggesting that these technologies have become embedded in students’ academic routines. This pattern is further substantiated by interview data, where participants described AI as an integral part of their writing workflow rather than a supplementary aid. One participant said, *“After getting a topic or assignment to write, I’ll go to the AI to get help. That makes me realise, I’m using AI tools a lot for writing assessments”*. Students reported engaging with AI at multiple stages of writing, from generating initial ideas to revising and refining drafts. For instance, one participant explained, *“When I don’t know how to start, AI gives me some ideas, and then I write it more easily and smoothly.”* According to the survey data, a staggering 80.4% of the 112 participants often use AI tools for academic writing. By contrast, 16.1% (18 students) rarely used AI tools, and 4 students (3.6%) sometimes did. The results support the notion that most students frequently use AI tools in their writing assignments.

Another participant emphasized the role of AI in revision, stating, *“Before submitting, I always use AI to check grammar and improve my sentences.”* These accounts indicate that AI tools function as both cognitive scaffolds that support idea development and linguistic scaffolds that enhance accuracy and clarity. Importantly, this dual function positions AI as a mediator of the writing process rather than merely a corrective tool. The participants used generative AI systems to break down complex passages in essay

prompts and create initial structural outlines, and their experiences closely resembled those within the Zone of Proximal Development (ZPD). These discussions about what is happening with the AI in this process create a feedback loop, as the AI builds on the student's current skills. In this digital mediation, learners can understand and perform complex academic writing features, such as thematic paragraph transitions and complex synthesis, that they would not otherwise be able to do independently. This interaction helps learners perform tasks beyond their current independent capabilities through AI-mediated support.

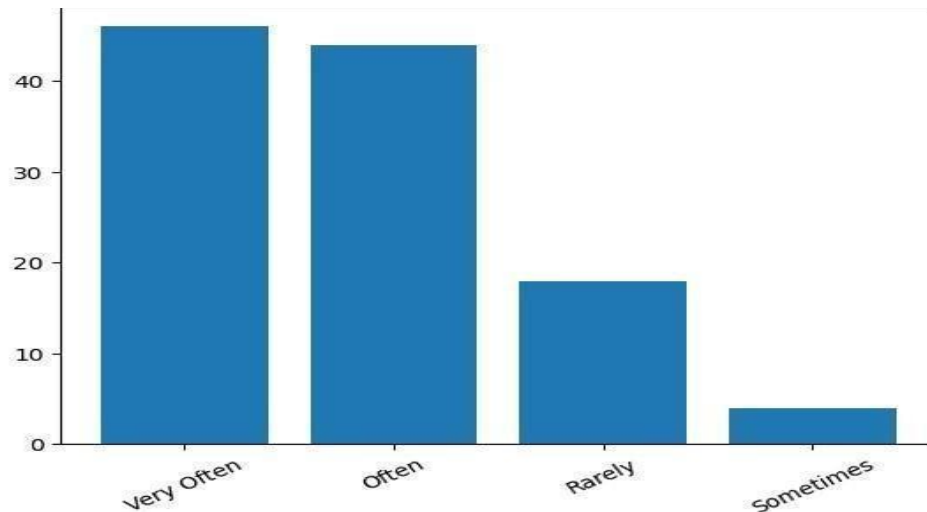


Figure 2. Frequency of AI Usage Among Students (N=112)

The frequency with which participants used the AI tools is shown in Figure 2. This displays the frequency of AI tool use among the participants (N = 112). 41.1% of students (46 students) reported using AI tools very often, and 39.3% (44 students) reported using them often for academic writing. By contrast, 16.1% (18 students) rarely used AI tools, and 4 students (3.6%) sometimes did. The results suggested that most students frequently use AI tools in their writing assignments.

The normalization of AI use is further reflected in the ways students describe its integration into their everyday academic practices. Rather than perceiving AI as optional, participants often framed its use as expected or even necessary. This finding underscores a shift in writing practices, in which technological assistance is increasingly embedded in the process of knowledge construction. However, this normalization also raises important questions regarding the evolving nature of authorship and the extent to which reliance on AI may reshape students' engagement with writing as a cognitive activity. In addition to its procedural benefits, the use of AI was strongly associated with increased confidence and a perceived improvement in language competence. Survey findings reinforce previous research indicating that students use AI for multiple purposes, including grammar correction, idea generation, and paraphrasing (see Figure 3).

These patterns are reinforced by interview responses, where participants described noticeable improvements in their ability to produce grammatically accurate and stylistically appropriate texts. As one participant stated, *"AI helps me write better sentences and makes my writing more formal."* Another added, *"I learn new words and phrases from AI, and I try to use them in my writing."* Beyond these technical aspects, participants also emphasized the affective impact of AI tools. The availability of immediate feedback appeared to reduce uncertainty and anxiety, particularly among students who lacked confidence in their English proficiency. One participant explained, *"AI gives me confidence because I can check my work before submitting, so I feel confident."* This result demonstrates that AI tools contribute to a more supportive learning environment by enabling students to engage more confidently in writing tasks. In this sense, AI not only improves performance but also enhances students' willingness to participate in academic writing, a critical factor in language development.

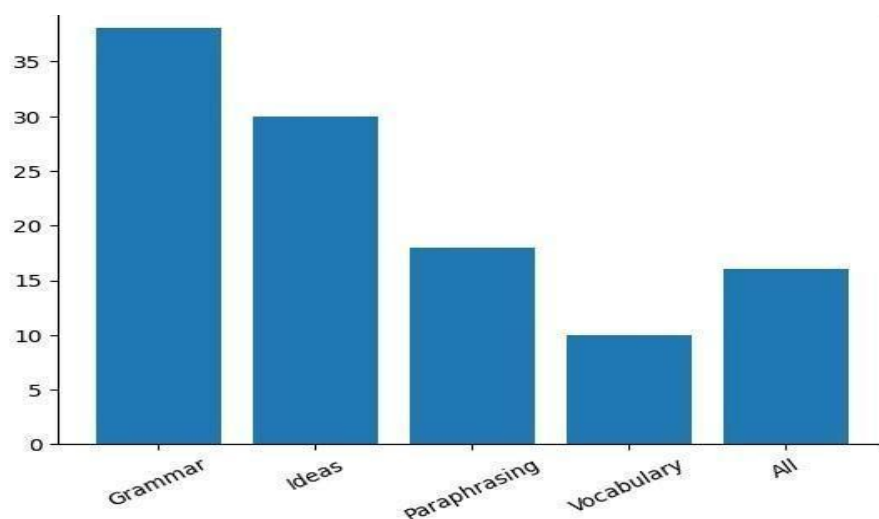


Figure 3. Main Purposes of Using AI Tools (N=112)

Figure 3 presents the main purposes for which students used AI tools in academic writing (N = 112). Grammar support was the most frequently reported purpose, selected by 38 students (33.9%). This was followed by idea generation, reported by 30 students (26.8%). Paraphrasing was identified by 18 students (16.1%), while 10 students (8.9%) primarily used AI tools to improve vocabulary. Additionally, 16 students (14.3%) reported using AI tools for all of these purposes. These findings suggest that students primarily view AI tools as resources for improving language accuracy and generating ideas during the writing process. The qualitative findings reveal that participants rely heavily on AI tools to correct grammatical errors and refine their vocabulary, which significantly reduces their academic writing anxiety. As one participant explained, *“Before using Grammarly, I spent hours worrying about my grammar mistakes. Now I feel much more relaxed because it fixed my errors immediately.”* From a theoretical standpoint, rather than viewing this assistance purely as a mechanical correction mechanism, the AI tool functions as a digital mediational resource that provides critical scaffolding during the drafting process (Vygotsky, 1978). By offloading the taxing cognitive demand of low-level mechanical accuracy onto the automated tool, students experience a lowered affective filter.

This cognitive shift allows them to allocate more mental resources away from sentence-level syntax and toward higher-order organization, academic argumentation, and structural coherence. Despite these positive perceptions, the findings also reveal a growing awareness of the potential limitations and risks associated with AI use. While survey data reflect generally favourable attitudes (see Figure 4), interview participants provided more critical and reflective perspectives. One of the most significant concerns relates to overreliance. Students acknowledged that the convenience of AI tools may lead to reduced engagement in independent thinking and idea generation. As one participant admitted, *“Sometimes I depend too much on AI, and I feel like I cannot write well without it.”* Another noted, *“If I use AI too often, I don’t really think deeply about my ideas.”* These reflections highlight an inherent tension between efficiency and cognitive engagement, suggesting that while AI tools can enhance productivity, they may also inadvertently limit opportunities for deeper intellectual processing if used excessively.

Concerns regarding the accuracy and reliability of AI-generated content were also consistently reported. Participants recognized that AI outputs are not always accurate, contextually appropriate, or sufficiently detailed. One student explained, *“Sometimes AI gives answers that are too general, so I need to fix them.”* Another added, *“I cannot trust AI completely because sometimes it makes mistakes.”* These findings reveal that students do not engage with AI uncritically; rather, they are aware of its limitations and recognize the need for careful evaluation. This suggests that effective use of AI tools requires not only

access but also the development of critical literacy skills that enable students to assess and adapt generated content appropriately.

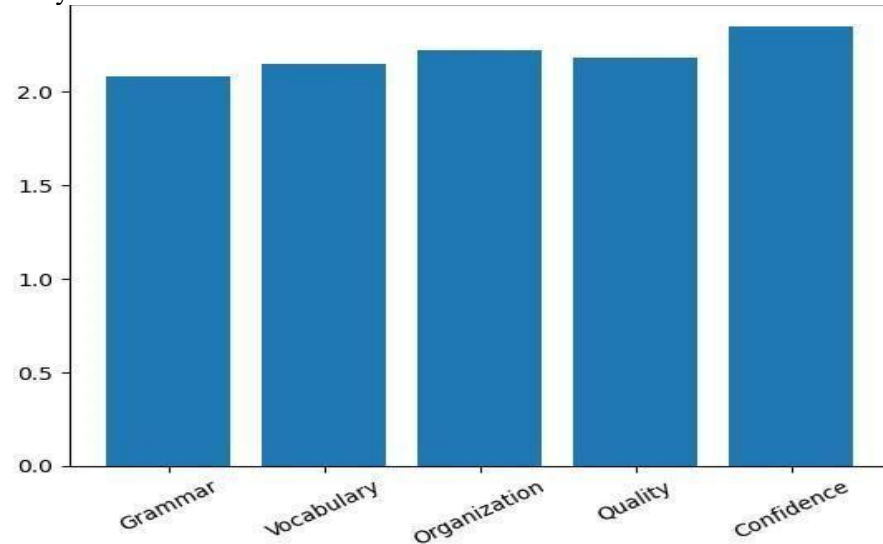


Figure 4. Perceived Benefits (Mean Scores)

Figure 4 presents students' perceived benefits of using AI tools in academic writing. Reflecting a strong overall agreement among the respondents, confidence enhancement received the highest mean score ($M = 4.25$, $SD = 0.61$), followed closely by structural organization ($M = 4.18$, $SD = 0.65$), overall quality improvement ($M = 4.12$, $SD = 0.68$), vocabulary enhancement ($M = 4.05$, $SD = 0.70$), and grammar support ($M = 3.98$, $SD = 0.72$). The relatively low standard deviations across all five metrics indicate a high degree of consensus among respondents, suggesting that students share strong positive beliefs about the baseline utility of these tools in facilitating their writing.

Ethical considerations emerged as a particularly salient dimension of students' experiences with AI tools. Survey findings indicate that students perceive challenges related to plagiarism and the absence of clear institutional guidelines (see Figure 5). These concerns were strongly echoed in the interview data, where participants expressed uncertainty about what constitutes acceptable use of AI in academic writing. Many students reported modifying AI-generated content to ensure originality, reflecting an awareness of academic integrity. As one participant stated, *"I always change the AI content because I want it to be my own work."* However, this practice was often accompanied by uncertainty and ambiguity. Another participant explained, *"We don't have clear rules, so I don't know what is allowed or not."* This lack of clarity reveals that students are navigating AI use in a largely unregulated environment, relying on personal judgment rather than institutional guidance. Such conditions may lead to inconsistent practices and increased anxiety, particularly in contexts where academic integrity is emphasized but not clearly defined in relation to emerging technologies. The findings, therefore, highlight the need for clearer pedagogical and institutional frameworks that can support students in using AI responsibly and effectively.

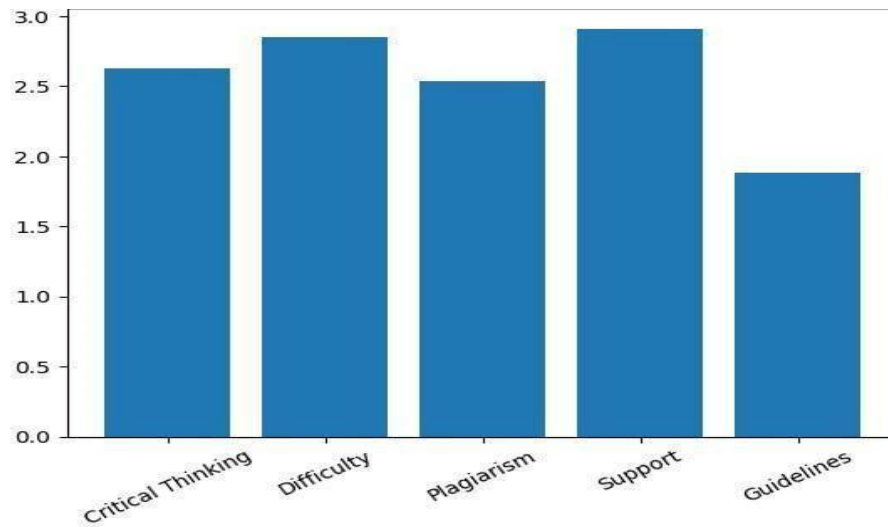


Figure 5. Perceived Challenges (Mean Scores)

Figure 5 presents students' perceptions of the challenges and structural needs associated with using AI tools in academic writing. Reflecting a strong consensus, the need for institutional guidelines emerged as a critical priority, commanding the highest mean score ($M = 4.42$, $SD = 0.59$), underscoring that students converge closely on the absolute necessity of clear policy frameworks. Among the perceived challenges, institutional support deficits were heavily noted ($M = 3.90$, $SD = 0.84$), followed closely by technical difficulties ($M = 3.85$, $SD = 0.79$), concerns regarding critical thinking degradation ($M = 3.62$, $SD = 0.76$), and plagiarism anxieties ($M = 3.53$, $SD = 0.81$). The low-to-moderate standard deviations across these variables indicate a shared concern among respondents regarding these systemic and cognitive risks. These descriptive distributions are subsequently contextualised and elaborated in the qualitative interview segments.

Note: Figures 4 and 5 display localized distribution scales to clearly highlight the empirical variation between specific item means, rather than showing the full unpopulated spectrum of the 5-point Likert scale. Overall, the results highlight that Indonesian EFL students adopt a nuanced, reflective, and adaptive approach to AI tools in academic writing. The survey data provide a broad understanding of widespread and frequent use, while the interview data demonstrate the complexity underlying these practices. Students recognise the substantial benefits of AI in enhancing efficiency, improving language quality, and increasing confidence, but they also acknowledge the associated risks, including overreliance, accuracy issues, and ethical concerns. Importantly, students are not passive users of AI; rather, they actively negotiate its role in their learning processes. This analysis revealed that the impact of AI on academic writing is not inherently positive or negative but depends on how it is integrated and guided within educational contexts.

Discussion

The findings of this study demonstrate that Indonesian EFL students hold generally positive yet nuanced beliefs regarding the use of AI tools in academic English writing. Students reported using platforms such as ChatGPT, Grammarly, QuillBot, Gemini, and Claude across multiple stages of the writing process, including idea generation, grammatical revision, vocabulary enhancement, and text organization. This pattern of use suggests that AI is not merely an auxiliary resource but has become an integrated component of students' writing practices. Such findings align with previous studies (Chen & Zou, 2023; Li, 2023; Pratiwi & Sari, 2022), which highlight AI's role as a scaffolding mechanism supporting language development and writing performance. However, this study extends prior research by demonstrating that students actively engage with AI not only for correction but also for initiating, shaping, and refining their ideas, indicating a more dynamic and process-oriented use of these tools. From a theoretical perspective, these findings can be interpreted through Vygotsky's (1978) sociocultural theory, particularly the concept of mediation and the Zone of Proximal Development (ZPD).

AI tools function as digital mediational means that enable learners to perform beyond their current independent capabilities. The data suggest that students do not passively accept AI-generated outputs; rather, they critically modify, adapt, and refine them. This shows that AI serves as a scaffolded support rather than a replacement for cognitive effort, reinforcing its role as a facilitator of learning rather than a substitute for it. In addition to cognitive benefits, the evidence suggests notable affective advantages. Students reported increased confidence in their writing abilities, particularly due to access to immediate feedback on grammar, vocabulary, and clarity. This finding is consistent with Lim, Gottipati, and Cheong (2023), who found that AI-assisted feedback can reduce writing anxiety and enhance learner confidence. Importantly, the present study finds that this confidence is closely linked to a heightened sense of autonomy, as students can independently evaluate and improve their work without relying solely on teacher feedback. This suggests that AI may contribute to a more student-centred writing environment, promoting self-regulated learning. Despite these advantages, several challenges were identified. A primary concern is the risk of overreliance on AI tools, which may reduce students' engagement in independent thinking. Participants acknowledged that frequent dependence on AI could weaken their ability to generate ideas autonomously.

These concerns were raised in prior literature (Perkins, 2023; Zou & Xie, 2024) regarding cognitive dependency. Notably, this study highlights that students themselves are aware of this tension, suggesting a critical awareness of the trade-off between convenience and learning development. Another significant issue relates to the accuracy and reliability of AI-generated content. Students reported that outputs were sometimes overly general, incomplete, or contextually inappropriate, requiring verification and revision. This aligns with findings from Kessler (2022) and Huang (2022), emphasizing the limitations of AI in producing fully reliable academic content. These findings underscore the importance of developing students' AI literacy, particularly their ability to critically evaluate and refine AI-generated information. Ethical concerns also emerged as a key theme. Students expressed uncertainty regarding acceptable uses of AI in academic contexts, particularly in the absence of clear institutional guidelines. Some participants reported that their use of AI-generated content had been questioned by lecturers, reflecting broader ambiguity in academic policies. This is consistent with Williamson and Eynon (2020), who note that unclear guidelines can lead to confusion and anxiety among learners.

The findings, therefore, highlight the need for institutions to move beyond restrictive approaches and instead provide clear, practical guidance on ethical AI use. Overall, the results suggest that Indonesian EFL learners adopt a balanced and reflective stance toward AI tools. While they recognize the potential of AI to enhance writing quality, efficiency, and confidence, they are also aware of associated risks, including overreliance, inaccuracies, and ethical concerns. This demonstrates that students are not passive users, but active agents negotiating the role of AI in their learning processes. These findings carry important pedagogical implications. Rather than prohibiting AI use, educators should focus on fostering AI literacy, encouraging critical engagement, and designing tasks that promote independent thinking alongside responsible AI integration. By doing so, AI can be effectively incorporated into writing instruction in support of skill development while maintaining academic integrity.

Limitations of the Study

This study provides valuable insights into Indonesian EFL students' beliefs and experiences regarding the use of AI tools in academic English writing; however, several limitations should be acknowledged. First, although the study included survey responses from 112 participants and in-depth interviews with 12 students, the sample remains relatively limited in scope. As such, the findings may not be fully generalizable to broader populations, particularly students from different institutional, cultural, or linguistic contexts. Second, the study was conducted within a single academic setting, which may influence the nature of students' experiences with AI tools. Institutional practices, access to technology, and instructional approaches can vary significantly across universities, shaping how students perceive and use AI in academic writing. Future research could expand this scope by including participants from multiple institutions to provide a more comparative perspective. Third, the study relied on self-reported data collected through surveys and interviews. While this approach allows for rich insights into students'

perceptions and experiences, it may also be subject to response bias, as participants might overreport positive behaviours or underreport challenges.

In addition, the study did not include direct analysis of students' written texts or AI-generated outputs, limiting the ability to evaluate the actual impact of AI use on writing performance. Fourth, the quantitative component was limited to descriptive statistics and did not include inferential analysis or formal reliability testing. While this approach was sufficient for identifying general trends, it restricts the ability to establish statistical relationships or make predictive claims. Future studies could incorporate inferential statistics to examine potential relationships between AI use and writing performance. Importantly, although this study adopted a mixed-methods design, some inconsistencies emerged between the quantitative and qualitative findings. For example, survey data suggested generally positive perceptions of AI tools in terms of efficiency, whereas interview data revealed concerns about overreliance and reduced cognitive engagement. While these differences were interpreted as complementary, the study did not systematically reconcile these divergences through deeper integrative analysis. As a result, the coexistence of these findings may introduce complexity in interpretation, and conclusions should be considered with caution. Lastly, the study was not designed to investigate causal relationships between AI use and writing outcomes. Future research could adopt longitudinal designs or incorporate textual analysis to examine how AI usage evolves over time and its direct impact on students' writing development. Despite these limitations, the study offers meaningful insights into the evolving role of AI in EFL academic writing and highlights important considerations for its effective and responsible integration in educational contexts.

Implications and Recommendations

The findings of this study have important implications for English language teaching, curriculum development, and higher education policy, and also provide practical recommendations for the effective integration of AI tools in academic writing contexts. As the results demonstrate, Indonesian EFL students are already actively using AI tools across multiple stages of the writing process. Therefore, rather than restricting their use, educators should adopt a structured, pedagogically guided approach that supports responsible, critical engagement with these technologies. Positioning AI as a learning support tool—rather than a substitute for student effort can help maintain learner autonomy while enhancing the overall writing process. A key implication of this study is the need to incorporate AI literacy into academic writing instruction. The findings reveal that while students benefit from AI tools, they also face challenges related to overreliance, accuracy, and the evaluation of AI-generated content. This suggests that students require explicit training in how to critically assess AI outputs, identify inaccuracies, and ensure the originality of their work. In practical terms, instructors are encouraged to design activities that promote critical interaction with AI, such as comparing AI-generated and self-produced texts, identifying errors, and justifying revisions. Such practices can help transform AI from a passive support tool into an active component of the learning process.

The study also highlights the importance of establishing clear institutional policies regarding the ethical use of AI in academic writing. Students in this research expressed uncertainty about acceptable practices, particularly in relation to plagiarism and academic integrity. This lack of clarity may lead to inconsistent use and increased anxiety among learners. Institutions should therefore develop transparent, context-specific guidelines that clearly define acceptable uses of AI tools. Providing such frameworks can support ethical awareness while ensuring that students' practices align with academic standards. Educators are encouraged to design writing tasks that balance independent thinking with the responsible use of AI tools. For example, students may be required to submit multiple drafts, include reflective statements explaining how AI tools were used, or critically evaluate AI-generated suggestions. These strategies promote transparency, accountability, and metacognitive awareness, while also encouraging deeper engagement with the writing process. Importantly, such approaches ensure that AI tools enhance rather than diminish students' cognitive and academic development. Finally, this study recommends that future research continue to explore the long-term impact of AI tools on the development of academic writing. While the present study provides valuable insights into students' current beliefs and practices, longitudinal and multi-context studies are needed to better understand how sustained AI use influences writing

proficiency, critical thinking, and learner autonomy. Expanding research in diverse educational settings will also help develop more comprehensive frameworks for the effective integration of AI in language learning.

Theoretical Implications

This study contributes to the existing literature in language learning with AI by building on current knowledge of AI's role in EFL academic writing. Despite the existing studies highlighting the benefits of AI in writing performance, the present findings show that students see AI not as a tool for linguistic support, but as a mediational resource to help them develop their ideas, revise and regulate their writing process. It indicates that the use of AI in language learning is not limited to mere error correction but can also be applied to more cognitive and metacognitive aspects of writing. The results confirm the sociocultural theory (Vygotsky, 1978) that the mediational tools play an important role in learning and cognitive development. The present study, however, builds on sociocultural theory by relating AI-mediated support to traditional scaffolding. AI-generated teacher feedback and suggestions are not limited to experts or peers; students are now more likely to be guided by AI-generated responses they can analyse, adjust, and modify to meet their learning needs. This means that scaffolding in modern learning contexts can take the form of dynamic interactions between learners and intelligent digital tools, and learners' autonomy and critical thinking are retained. Additionally, the results enrich the constructivist approach by showing that learning from AI while writing is an active learning process. Learners should engage with and adjust AI-generated material rather than take it on faith. This signifies that the educational potential of AI goes beyond its technical capabilities and that learners need to be able to critically engage with the AI output for it to be educational. In this sense, AI literacy is an integral part of academic literacy in higher education. Overall, these findings support ongoing theoretical debates by emphasising the importance of the interplay among technological support, learner agency, and critical evaluation in the effectiveness of AI for writing. The study thus offers a vision for how AI can be used as a mediational device to enhance academic writing while still placing the learner at the centre of the process and responsible for its use.

CONCLUSION

This study explored Indonesian EFL students' beliefs and challenges regarding the use of AI tools in academic English writing. The findings reveal that students generally hold positive perceptions of AI and actively integrate these tools across multiple stages of the writing process, including idea generation, grammar correction, vocabulary development, and text organization. In addition to these functional benefits, AI tools were found to enhance students' confidence and reduce writing anxiety, highlighting their potential to support both cognitive and affective dimensions of language learning. However, the study also identifies several critical challenges, including the risk of overreliance, concerns about the accuracy and reliability of AI-generated content, questions about originality, and ethical uncertainty regarding academic integrity. These findings suggest that the impact of AI on learning is not inherently beneficial, but is shaped by the ways in which learners engage with the technology. Importantly, students' awareness of these limitations indicates a developing critical engagement with AI, rather than passive dependence. This study contributes to the growing body of research on AI-assisted language learning by demonstrating that AI tools can effectively support the development of academic writing when used in a guided and reflective manner. The findings underscore the need to balance technological assistance with the cultivation of independent thinking and critical evaluation skills. Accordingly, educators and institutions play a pivotal role in shaping responsible AI use by establishing clear guidelines, integrating AI literacy into curricula, and designing pedagogical practices that promote transparency, accountability, and active learner engagement. Ultimately, the integration of AI in academic writing should not be framed as a binary between opportunity and threat. Instead, it should be understood as a pedagogical resource that requires critical, ethical, and

purposeful use. By adopting this perspective, learners can harness the benefits of AI while maintaining the integrity and depth of their academic work.

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