Investigating the use of AI for academic writing among EFL college students: A case study at English Education Study Program of Universitas Ahmad Dahlan Yogyakarta

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Abstract: *The rapid growth of Artificial Intelligence (AI) has transformed various educational practices, particularly in enhancing students' academic writing. This study investigates the effectiveness of Grammarly, an AI-based writing assistant, in improving English as a Foreign Language (EFL) students' academic writing. Using a descriptive qualitative case study, data were collected through semi-structured interviews with five university students who regularly used Grammarly in their writing tasks. Findings revealed that four participants reported noticeable improvements in grammar accuracy and writing structure, while three participants stated that Grammarly helped them expand their vocabulary and refine their writing style. Most participants agreed that Grammarly's real-time feedback enhanced their writing fluency and self-assurance, allowing them to produce more coherent and polished academic texts. Furthermore, its instructional explanations enabled students to recognize and correct recurring errors, fostering independent learning and long-term writing competence. However, two participants expressed concern about over-reliance on the tool, emphasizing the importance of maintaining self-editing and critical thinking skills. Overall, Grammarly proved to be a valuable support system that bridges the gap between technology and language learning, helping students write more effectively. The study concludes that integrating AI tools such as Grammarly can complement traditional instruction by offering personalized, immediate feedback that promotes both accuracy and autonomy in writing. Future research is recommended to explore how AI-based applications can be further adapted to diverse academic contexts and writing disciplines to maximize their pedagogical potential.*

Keywords: *Bilingual Book, Luwu Folktales, Reading Comprehension*

INTRODUCTION

English is a common language in today's global world, and it is used in all industries, especially education. Furthermore, it has a positive impact on numerous parts of society, including organization, educational activities, and school, where kids need it for their English comprehension and it has become an obligatory topic. In Indonesia, English is taught as a foreign language and is needed at all levels of school. According to Maulidina & Wibowo (2022) studying English presents a number of challenges due to a variety of factors such as different conditions, school systems, people's capacities, and other considerations. Aside from that, pupils must be proficient in the four skills of hearing, speaking, reading, and writing.

Writing is the most difficult skill since it requires multiple components, including theory, method, grammar, writing structure, thoughts for what we want to write, and so on. Writing is the process of organizing a collection of sentences and connecting them a specific way. Language acquisition builds on other skills like reading, speaking, and listening. The writing process involves numerous processes, including ways for locating and managing thoughts, writing ideas on paper, reworking, and re-examining writing. With the steps in the writing process, writers can simply improve their writing abilities (Hanafi Wibowo, 2019).

Writing ability is one of the important skills that students must have in the academic world. Effective writing includes not only the ability to convey ideas clearly and logically, but also the ability to use correct grammar, proper spelling, and an appropriate writing style.   However, many students face challenges in academic writing, especially when it comes to grammar and spelling. According Qurrotin et al., (2021), over 70% of EFL students experience persistent grammatical and lexical issues that hinder their ability to express ideas effectively. These challenges often lead to frustration and lower writing confidence, especially in academic contexts that demand high standards of accuracy and clarity. In an effort to overcome these challenges, technology has become an invaluable tool. One technology that stands out in helping to improve writing skills is Artificial Intelligence (AI).

Grammarly, as one such AI-based application, has gained widespread attention for its ability to automatically detect and correct grammar, spelling, and writing style errors. Using advanced machine learning algorithms, Grammarly is able to provide real-time feedback to users, helping them correct errors and improve the quality of their writing (Zuhriyah & Pratolo, 2020). Grammarly offers not only basic corrections, but also improvement suggestions to make writing clearer and more effective.

Features such as plagiarism detection, improved vocabulary suggestions, and customization of writing style according to the target audience, make Grammarly a comprehensive tool for writers of different skill levels. Students, as a group of users who often have to produce high-quality academic writing in a limited amount of time, can greatly benefit from using Grammarly. The use of Grammarly among college students not only helps in correcting existing mistakes but also acts as a learning tool that helps them understand and avoid the same mistakes in the

future. Thus, Grammarly can contribute to the overall improvement of college students' writing skills.

This research aims to explore how Grammarly, as an AI-based application, can improve writing skills among university students. While previous research has explored the general benefits of Grammarly in improving writing performance Phuangsuwan et al., (2024) , few studies have provided an in-depth exploration of how students perceive and internalize Grammarly's feedback for long-term writing development. Most existing studies focus on quantitative outcomes—such as error reduction rather than on learners lived experiences and the pedagogical implications of AI-assisted writing. This study seeks to fill that gap by examining how EFL students use Grammarly to enhance their writing and how the tool influences their learning behavior and self-regulation.

This case study will examine the effectiveness of Grammarly in helping college students correct grammar and spelling mistakes, as well as how this app can improve the quality of their academic writing. In addition, the study will also highlight students' experiences and perceptions towards using Grammarly in their writing process. With a better understanding of the benefits and challenges of using Grammarly, it is hoped that the results of this study can provide valuable insights for the further development of AI-based learning technologies and their implementation in higher education. This background provides a comprehensive context on the importance of writing skills for university students, the role of Grammarly as an AI-based tool, and the objectives of the research to be conducted. Therefore, this research aims to investigate the use of Grammarly as an AI-based tool to improve academic writing among EFL university students. Specifically, it addresses the following research questions:

1. How do EFL students perceive the use of Grammarly in improving their academic writing?
2. What aspects of writing do students report as most improved through Grammarly's feedback?
3. What challenges or limitations do students encounter while using Grammarly in academic writing?

LITERATURE REVIEW

Two previous studies provide important insights into the use of Grammarly as an AI-based writing tool in EFL contexts. The first study, conducted by (Phuangsuwan et al., 2024), explored the effectiveness of Grammarly in improving students' academic writing through a descriptive qualitative review. The researchers analyzed various academic publications and concluded that Grammarly academic significantly aids writers in identifying grammatical and structural errors. The study emphasized that Grammarly not only helps correct mistakes but also serves as an instructional platform that supports learning by providing immediate feedback and explanations. However, the study remains largely theoretical, relying on literature synthesis rather than empirical classroom data, leaving unanswered questions about how students actually perceive and apply Grammarly's feedback in authentic writing situations.

The second study, by Alotaibi, (2023) investigated the impact of Grammarly on enhancing grammar proficiency among Saudi EFL students using a quasi-experimental design. The findings demonstrated a 35% reduction in grammatical errors and notable improvement in students' sentence structure and lexical variety after consistent Grammarly use. Despite these positive outcomes, Alotaibi noted potential drawbacks, such as students' growing dependence on AI-generated corrections and limited development of self-editing skills. This highlights the need for pedagogical guidance to balance technological support with independent writing practice.

In summary, while both studies confirm Grammarly's usefulness in improving writing accuracy and efficiency, they primarily focus on quantitative improvements and short-term outcomes. Neither study provides a deeper exploration of students' perceptions, cognitive engagement, or long-term learning effects, particularly within the Indonesian higher education context. Therefore, the present research seeks to address this gap by examining how Indonesian EFL university students perceive and experience Grammarly's feedback in developing their academic writing skills.

AI in Education

Artificial Intelligence (AI) has rapidly transformed the educational landscape by offering personalized, data-driven, and adaptive learning experiences. AI applications in education include automated assessment, intelligent tutoring systems, chatbots, and writing assistance tools (Richter et al., 2025). These technologies enhance both teaching and learning processes by providing immediate feedback and fostering student engagement. According to (Kovalenko & Baranivska, 2024), the integration of AI into education has the potential to improve learning efficiency by 30–40%, particularly in areas involving language learning and writing. AI tools are also aligned with constructivist learning theory, which emphasizes that learners build knowledge through experience and reflection.

AI supports active learning by providing individualized feedback that allows learners to reconstruct and refine their understanding. For instance, intelligent writing systems analyze linguistic features and provide targeted corrections that help learners internalize grammatical structures. Similarly, feedback theory Burger et al., (2025) underscores the importance of timely and specific feedback in improving performance—principles that AI tools like Grammarly operationalize through real-time error correction and language enhancement suggestions.

Grammarly and AI-Based Writing Tools

Grammarly, launched in 2009, is one of the most widely used AI-powered applications for improving writing accuracy and coherence. The tool uses natural language processing (NLP) and machine learning algorithms to detect grammatical, lexical, and stylistic errors, offering suggestions for improvement. Studies in multiple contexts have demonstrated Grammarly's effectiveness in supporting English language learners.

According to Alotaibi, (2023), found that Grammarly significantly improved L2 students' accuracy and complexity in mobile-assisted writing tasks. Similarly, Alotaibi (2023) reported that Saudi EFL learners who used Grammarly showed a 35% reduction in grammatical errors and an increase in lexical diversity. In Indonesia, Perdana et al., (2021) observed that Grammarly was particularly effective in helping undergraduate students identify syntactic errors and refine sentence fluency.

EFL Writing Challenges

Writing is widely acknowledged as the most complex of the four language skills, requiring the integration of linguistic accuracy, coherence, organization, and critical thinking (Hyland, 2016). EFL students often face difficulties with grammar, vocabulary, and idea development due to limited exposure to English outside the classroom (Ariyanti, 2016; Bacha, 2002). In Indonesia, Qurrotin et al. (2021) reported that over 70% of EFL learners struggled with verb tenses and sentence structures, while 60% had challenges maintaining coherence across paragraphs.

Globally, similar trends have been observed. Liu and Stapleton (2018) found that Chinese EFL learners exhibit high levels of grammatical inaccuracy and lack cohesive devices in their academic writing. In contrast, Thai EFL students' difficulties often involve lexical variety and organization (Phuangsuwan et al., 2024). These studies highlight a persistent global challenge in L2 writing pedagogy: how to help learners internalize grammatical and stylistic conventions while promoting autonomy and critical awareness.

Critical Analysis and Research Gap

While many studies affirm the positive effects of Grammarly and similar tools, several research gaps remain. First, most prior studies employ quantitative designs focusing on measurable outcomes (e.g., error counts or writing scores) without exploring students' perceptions, cognitive engagement, or affective responses (Shoufan, 2023). Second, limited research investigates how feedback from Grammarly contributes to long-term learning rather than immediate correction. Third, existing literature tends to treat Grammarly as a static tool, with little attention to how students interact with its feedback or transfer the corrections into future writing tasks. Moreover, there is a lack of context-specific studies in Indonesia that analyze how university students perceive AI-based feedback in academic writing. Given the increasing integration of AI tools in Indonesia.

RESEARCH METHOD

Research Design

This study used a descriptive qualitative design with a case study approach to explore how Artificial Intelligence (AI)-based tools, specifically Grammarly, impact students' academic writing performance and learning experiences. A qualitative case study design was chosen because it allows for an in-depth understanding of participants' perceptions, behaviors, and attitudes in a real-life educational context (Creswell & Poth, 2018).

Participants

Participants consisted of five female EFL students enrolled in the third semester of the Master of English Language Education Program at Ahmad Dahlan University, Yogyakarta, in the 2024/2025 academic year. Their ages ranged from 22 to 26 years. All participants had at least an intermediate to upper-intermediate level of English proficiency, based on their previous academic writing course performance and TOEFL-equivalent scores. Participants were selected using purposive sampling because they met certain inclusion criteria: (1) actively using Grammarly for at least one semester in their academic writing, (2) currently taking a course related to academic writing, and (3) willing to participate in an interview voluntarily. This sampling technique ensured that participants could provide rich and relevant insights about their use of Grammarly in their academic writing.

Data Collection

Data were collected through semi-structured interviews, which allowed flexibility in exploring participants' experiences while maintaining consistency in key questions. Interviews were conducted individually and face-to-face in a quiet room on campus. Each session lasted between 30 and 45 minutes and was audio-recorded with the participants' consent. All recordings were then transcribed verbatim for analysis.

List Interview Question

1. What is your knowledge about using Grammarly?
2. What is your experience using Grammarly?
3. What is your perception of using Grammarly?
4. What is the impact of using Grammarly?
5. What is your general view of AI technology in education?

Data Analysis

The collected data were analyzed using thematic analysis, following Cassell, (2025) six-step framework:

1. Familiarization: Reading and rereading the interview transcripts to gain a general understanding of the data.
2. Initial Coding: Highlighting key phrases and assigning open codes to key concepts related to Grammarly usage.
3. Generating Themes: Grouping similar codes into broader themes such as writing improvement, self-directed learning, and technology dependency.
4. Reviewing Themes: Refining and merging overlapping themes to ensure coherence and internal consistency.
5. Defining and Naming Themes: Finalizing clear and descriptive labels for each theme.
6. Reporting: Presenting thematic findings with supporting quotes from participants to illustrate key insights.

To ensure the validity and reliability of the analysis, manual coding was conducted independently by two researchers. Differences in interpretation were discussed and reconciled until consensus was reached.

Trustworthiness of the Study

This study followed Elo et al., (2014) four criteria for ensuring credibility:

1. Credibility: Achieved through member checking, in which participants reviewed summaries of their interview responses to ensure accuracy.
2. Transferability: Provided by a detailed contextual description of the participants and the research setting, allowing other educators to assess its applicability in similar contexts.
3. Reliability: Ensured through consistent data collection procedures and documentation of each step of the study.
4. Confirmability: Maintained by maintaining an audit trail, including interview transcripts, coding notes, and reflective memos to minimize researcher bias.

Ethical Considerations

All research procedures adhered to the ethical standards established by the Ahmad Dahlan University Institutional Review Board (IRB). Participants were informed of the purpose, procedures, and their right to withdraw at any time without penalty. Written informed consent was obtained prior to participation. Confidentiality was ensured by anonymizing participant names and storing all digital files in a password-protected folder accessible only to the researcher. No identifying information was included in the final report.

FINDINGS AND DISCUSSION

Based on interviews conducted with 5 students regarding Investigating the use of AI for academic writing among EFL college students: A case study at English Education Study Program of Universitas Ahmad Dahlan Yogyakarta.

Introduction to Using Grammarly:

S1 "I use Grammarly because I often have difficulty checking grammar and spelling manually, and I want to improve the quality of my academic writing"

S2 "I know Grammarly on the recommendation of my lecturer to improve my academic writing skills"

S3 " I know this application from Tik-Tok, when I was looking for recommendations to check grammar in writing at that time

Based on the interview results from student responses, their main motivation for using Grammarly in academic writing activities is to overcome difficulties in checking grammar and spelling manually and to improve the quality of their academic writing. In addition, recommendations from lecturers were also a significant driving factor in using Grammarly to improve academic writing skills.

This suggests that support and direction from lecturers can motivate students to utilize AI technology in their learning.

Personal Experience with Grammarly:

S3 *"Grammarly makes me more efficient in my daily writing by providing immediate fixes"*

S4 *"I think Grammarly is very helpful in improving grammar in my writing field"*

S5 *"In my opinion, the experience of using this application is very helpful even though there are limitations in checking, it would be even better if the application was premium"*

Based on students' responses regarding their personal experience with Grammarly, it can be concluded that using Grammarly improves efficiency in daily writing by providing immediate fixes. Students found Grammarly very helpful in improving the grammar in their writing, suggesting that the tool effectively improves their overall academic writing skills.

Perceptions of Grammarly Use:

S3 *"I see Grammarly as a handy tool in improving my writing skills, especially in academic writing classes"*

S 4 *"Yes, Grammarly helps me learn from word mistakes and be able to correct those mistakes correctly"*

S 5 *"It is very interest to use Grammarly because I find it easy to check if there are any word mistakes"*

From students' responses regarding the perceived use of Grammarly, it can be concluded that Grammarly is seen as a very useful tool for improving writing skills, especially in academic writing classes. Grammarly not only helps in correcting word errors directly but also helps students learn from such errors and correct them correctly. The experience of using Grammarly was considered engaging by students due to the ease of checking and correcting word errors, thus reinforcing the effectiveness of this tool in supporting the learning process and the improvement of academic writing skills.

Impact of using Grammarly:

S1 *"Grammarly helps me easily understand grammar rules better and can correct word mistakes that I write"*

S2 *"I feel more confident when using Grammarly because I know my writing is more accurate and professional after using Grammarly"*

From students' responses regarding the impact of using Grammarly, it can be concluded that Grammarly helps them more easily understand grammar rules and correct word errors they write. The use of Grammarly also increases students'

confidence in writing, because they know that their writing becomes more accurate and professional after using Grammarly. This shows that Grammarly not only improves the quality of academic writing, but also has a positive impact on students' confidence in their writing abilities.

General Views on AI Technology in Education:

> *S1 "I strongly support the use of AI technologies like Grammarly in supporting the learning process of writing, especially in academic writing classes"*

> *S2 "I hope Grammarly can continue to develop and customize improvement suggestions according to different academic writing contexts"*

From the students' general views regarding AI technologies in education, it can be concluded that they strongly support the use of AI technologies such as Grammarly in supporting the writing learning process, especially in academic writing classes. The students expect Grammarly to continue to evolve and be able to customize improvement suggestions according to different academic writing contexts. This shows that there is a desire to see more advanced and customized AI technologies to meet specific needs in higher education.

DISCUSSION

The points obtained by the researcher from the interview results are as follows:

The Function of AI in EFL Students' Academic Writing

Artificial Intelligence (AI) plays a transformative role in enhancing the academic writing skills of English as a Foreign Language (EFL) students (Alotaibi, 2023). AI-driven tools, such as Grammarly, provide real-time feedback on grammar, spelling, and stylistic issues, which are critical for students who are learning to write in a second language. These tools utilize advanced machine learning algorithms to identify errors and suggest improvements, helping students to correct mistakes promptly and understand the rules of English grammar and syntax more effectively. By offering instantaneous corrections and explanations, AI tools support students in developing a stronger grasp of writing conventions and producing higher-quality academic texts (Haddad, 2014).

The integration of AI in EFL education extends beyond mere error correction. AI tools often include features that enhance learning, such as explanations of grammatical rules, vocabulary suggestions, and style improvements (Phuangsuwan et al., 2024). These features not only address immediate writing issues but also contribute to long-term skill development (Arisandi, 2023). For instance, by providing explanations for corrections, AI tools help students learn from their mistakes and avoid repeating them. This educational aspect of AI tools fosters a more profound understanding of writing mechanics and encourages students to apply these lessons to future writing tasks, thereby improving their overall writing proficiency.

However, the use of AI in academic writing is not without challenges. Over-reliance on AI tools can lead to a diminished focus on independent writing practices and critical thinking. Students might become accustomed to relying on AI for corrections rather than developing their own editing and proofreading skills. Additionally, while AI tools are effective in identifying and correcting language errors, they may not fully address nuanced aspects of writing, such as context-specific stylistic choices or complex argumentation. Therefore, while AI tools offer significant benefits, they should be used in conjunction with traditional learning methods to ensure comprehensive skill development and maintain a balance between technological support and personal writing proficiency.

The incorporation of Artificial Intelligence (AI) in educational settings, particularly in the areas of language acquisition and scientific writing, signifies an important transformation in teaching methodologies (Haddad, 2014). This dynamic can be further understood by looking at the Ahmad Dahlan University Yogyakarta case study, which focuses on how EFL (English as a Foreign Language) students utilize Grammarly.

Using AI to Improve Writing Skills

According to Mahmud, (2023). Artificial Intelligence (AI) has revolutionized the way students approach improving their writing skills, offering tools that provide instant, actionable feedback. AI applications like Grammarly utilize sophisticated algorithms to analyze written text for errors in grammar, spelling, and punctuation. This real-time feedback is invaluable for students, especially those learning English as a Foreign Language (EFL), as it allows them to quickly identify and correct mistakes that might otherwise go unnoticed. By integrating these AI tools into their writing routine, students can refine their writing through continuous practice, which enhances their accuracy and fluency over time.

Beyond error correction, AI tools offer a range of features designed to improve writing quality. For example, many AI applications provide suggestions for enhancing vocabulary and style, which can help students develop a more sophisticated and varied writing style (Dizon & Gayed, 2021). These tools often include features that suggest alternative words, rephrase sentences for clarity, and recommend adjustments to improve the overall flow and coherence of the text. Such features are particularly beneficial for EFL students who may struggle with idiomatic expressions or nuanced language use, as they provide practical suggestions that contribute to clearer and more effective communication.

The use of AI in writing also supports students in understanding and applying writing conventions. Many AI tools offer explanations for the corrections they suggest, helping students learn the underlying rules of grammar and style (Bacha, 2002). This educational component fosters a deeper comprehension of writing mechanics and encourages students to apply these principles independently in future writing tasks. By learning from the feedback provided, students can gradually internalize these rules and improve their ability to produce well-structured and error-free academic texts.

Despite the advantages, there are challenges associated with relying on AI tools for writing improvement. Over-dependence on these tools can lead to a reduction in students' self-editing and critical thinking skills. If students become too reliant on AI for corrections, they may not develop the necessary skills to review and refine their own writing effectively (Malakar & Leeladharan, 2024). Therefore, while AI tools are a valuable asset, they should be used as a supplementary resource rather than a replacement for traditional writing practices. Balancing AI support with independent writing exercises ensures that students develop both technological proficiency and essential writing skills. The conclusions of this study show Grammarly's varied assistance for academic writing.

The students' answers show that Grammarly successfully addresses basic writing problems including grammar and spelling errors, which are often difficult to correct manually. This is consistent with larger studies highlighting AI technology's advantages for quick and precise feedback, which is essential for the iterative process of writing improvement (Qurrotin et al., 2021).

Effectiveness and Confidence in Writing

According to Sholikah & Anwar (2019). The effectiveness of AI tools like Grammarly in improving writing skills is evident through their ability to provide immediate, precise feedback on various aspects of writing, such as grammar, spelling, and style. By highlighting errors and suggesting corrections in real-time, these tools streamline the revision process for students, allowing them to address mistakes promptly. This immediate feedback not only helps in rectifying errors but also facilitates a more efficient writing process, where students can focus on content rather than getting bogged down by technical issues. As a result, students are able to produce more polished and error-free texts, reflecting the effectiveness of AI tools in enhancing overall writing quality (Malakar & Leeladharan, 2024).

The confidence boost that AI tools offer is a significant factor in their effectiveness. Many students report feeling more assured about their writing when using AI tools because they know that their work has been scrutinized for errors and improved by advanced algorithms (Weldy, 2014) . This increased confidence is crucial, especially for EFL students who might otherwise feel uncertain about their language proficiency. Knowing that their writing is being corrected and refined by a reliable tool allows students to approach their writing tasks with greater self-assurance, which can positively impact their overall academic performance and willingness to engage in writing assignments.

Furthermore, AI tools contribute to building students' confidence through their educational features. For instance, many AI applications offer explanations and tips on why certain corrections are suggested, helping students understand and learn from their mistakes. This educational component supports students in grasping complex grammar rules and stylistic conventions, empowering them to apply these insights to future writing tasks independently. As students become more familiar with these rules and gain a better understanding of effective writing practices, their confidence in their ability to produce high-quality work continues to grow.

However, while AI tools enhance writing efficiency and confidence, it is essential to recognize the potential drawbacks of over-reliance. If students become too dependent on these tools for error correction, they may not fully develop their own proofreading skills or critical thinking abilities. Balancing the use of AI with traditional writing practices is crucial for ensuring that students retain and enhance their self-editing skills. By integrating AI feedback with deliberate practice and review, students can build a more robust foundation for their writing abilities, combining the advantages of technology with essential manual editing skills (Irawati, 2015). Student can get feedback from Grammarly on the improved efficiency of their writing process. Students are able to spot and correct errors quickly without taking too much time which promotes a smoother and uninterrupted writing process. Additionally, the tool's ability to provide style and clarity recommendations aided students in improving their writing beyond just grammatical accuracy (Kazemian et al., 2021).

Learning and Long-Term Skill Development

According to Perdana et al. (2021). Grammarly is a learning tool in addition to offering real-time fixes. Students mentioned that by taking note of the remarks, students could learn from their mistakes and prevent them from happening again. Grammarly's instructional component is essential because it shows that artificial intelligence (AI) technologies can support long-term skill development as opposed to merely short-term error correction. Effective learning requires the capacity to absorb criticism and develop on one's own over time.

The role of AI tools like Grammarly extends beyond immediate error correction, offering substantial benefits for long-term skill development in academic writing. By providing detailed feedback and explanations, these tools help students understand their mistakes and learn from them. For instance, when Grammarly points out a grammar error and explains the rule behind it, students gain insights into grammatical conventions and improve their understanding of language mechanics. This educational approach facilitates deeper learning, enabling students to internalize writing rules and apply them more effectively in future assignments. Consequently, students develop a stronger grasp of writing principles, which supports their growth as more competent and confident writers (Collins, 2017).

Moreover, the interative feedback loop facilitated by AI tools promotes continuous improvement in writing skills. As students engage with the feedback provided by tools like Grammarly, they have the opportunity to refine their writing strategies and techniques over time. This interative process encourages students to repeatedly apply learned concepts, reinforcing their writing abilities. Over time, this repeated practice helps in solidifying their understanding and mastery of various writing skills, contributing to their overall proficiency. By consistently engaging with AI feedback, students build a more resilient skill set that evolves with their writing experiences.

According to Mena-guacas, (2023), AI tools also support long-term skill development by offering personalized feedback tailored to individual writing needs. Many AI applications use algorithms that adapt to a user's writing style and common

errors, providing targeted suggestions that address specific areas for improvement. This personalized approach ensures that students receive relevant guidance that aligns with their unique writing challenges.

As a result, students can focus on their particular weaknesses and track their progress in addressing them. This customized feedback not only aids in immediate improvements but also fosters a more nuanced understanding of writing skills, leading to sustained development over time. Despite these advantages, it is crucial to strike a balance between relying on AI tools and developing independent writing capabilities. While AI can significantly enhance learning and skill development, students must also engage in traditional writing practices to build critical thinking and self-editing skills (Ariyanti, 2016). Over-reliance on AI for corrections could inhibit students from fully developing these essential skills. Therefore, integrating AI feedback with self-directed learning and regular practice ensures that students benefit from technology while still cultivating the cognitive and analytical skills necessary for proficient writing. This balanced approach supports both immediate improvement and long-term growth in writing competence.

Student Perceptions and Artificial Intelligence Adoption

The study also highlights the broader perception of AI in education among students. Strong support for artificial intelligence (AI) applications, such as Grammarly, indicates a readiness and willingness to adopt new learning technologies. The students stated that more research and development should be done on AI tools to better adapt them to specific academic environments. This is particularly important as it emphasizes the need for AI tools that are flexible and responsive to academic writing across different disciplines, which is important for developers and educators (Alostath, 2021).

Student perceptions of AI tools, such as Grammarly, reflect a growing acceptance and enthusiasm for integrating technology into the learning process. Many students view AI applications as valuable aids in their academic writing journey, appreciating the immediate feedback and error correction they provide (Maulidina & Wibowo, 2022). This positive perception is rooted in the tangible benefits these tools offer, such as enhanced writing accuracy, increased efficiency, and greater confidence in their work. As students experience the advantages of AI firsthand, their willingness to adopt and integrate such technologies into their writing practices increases, signaling a broader acceptance of AI in education.

Furthermore, students often express a desire for continuous development and customization of AI tools to better fit their specific academic needs. This feedback indicates that while students value the current capabilities of tools like Grammarly, they also see the potential for further refinement and personalization. The demand for more tailored suggestions and context-specific feedback underscores the need for ongoing advancements in AI technology to address diverse writing challenges across various disciplines. Students' expectations highlight the importance of evolving AI tools to remain relevant and effective in supporting academic writing (Zuhri Dj & Sukarnianti, 2015).

Despite the enthusiasm for AI adoption, there are concerns about the potential over-reliance on these tools. Some students worry that heavy dependence on AI for writing corrections might diminish their critical thinking and self-editing skills. This concern suggests a need for a balanced approach, where AI tools are used as supportive resources rather than sole solutions. By complementing AI assistance with traditional writing practices and self-review strategies, students can maximize the benefits of technology while still cultivating essential writing skills. This balanced perspective is crucial for ensuring that AI adoption enhances rather than hinders students' overall writing development.

Challenges and Considerations

While there are positives to be taken away, this study found potential challenges. Over-reliance on AI tools can lead to reduced critical thinking and self-editing skills. Therefore, it is crucial for educators to strike a balance between using AI as a support tool and encouraging independent writing practice. In addition, ensuring that students understand the rules of grammar and modify their language style, rather than just accepting suggestions from AI, is crucial for comprehensive skill development or paraphrasing to avoid plagiarism (Alostath, 2021).

According to Labidi, (2022), The integration of AI tools like Grammarly into academic writing offers substantial benefits, but several challenges must be addressed to maximize their effectiveness. One of the primary concerns is the potential for over-reliance on these tools, which can undermine the development of critical thinking and self-editing skills. When students become too dependent on AI for correcting errors and improving their writing, they may not fully engage in the cognitive processes necessary for refining their work. This over-reliance can inhibit their ability to critically assess and revise their writing independently, which is crucial for academic and personal growth.

To address this challenge, it is essential for educators to strike a balance between leveraging AI tools and promoting independent writing practice. AI can be a valuable aid, but it should not replace the foundational skills of self-editing and critical evaluation. Educators need to design curricula that encourage students to actively engage in the writing and revision process without excessive dependence on AI. By incorporating assignments and exercises that require manual editing and critical reflection, educators can help students develop a more robust set of writing skills and maintain their engagement with the writing process.

Another significant consideration is ensuring that students understand the underlying rules of grammar and writing conventions rather than merely accepting AI suggestions at face value. AI tools, while proficient in error correction, often provide limited explanations for their recommendations. Students must be educated on grammar rules and stylistic guidelines to fully comprehend and apply these principles in their writing. This understanding is essential not only for skill development but also for maintaining academic integrity, particularly in avoiding issues like plagiarism. Educators should therefore focus on teaching the foundational aspects of grammar and writing, ensuring that AI tools support rather than substitute this learning process (Yolanda et al., 2020).

Moreover, addressing the challenge of potential plagiarism is crucial when using AI tools. Students might be tempted to rely heavily on AI-generated suggestions or corrections, which could inadvertently lead to issues of academic dishonesty if not properly managed. Educators need to emphasize the importance of original writing and the ethical use of AI tools. By integrating lessons on academic integrity and the appropriate use of AI, educators can help students navigate the complexities of modern writing tools while maintaining their commitment to ethical standards and originality in their work.

CONCLUSION

In conclusion, the case study of Grammarly use among EFL students at Universitas Ahmad Dahlan Yogyakarta illustrates the significant benefits of AI in enhancing academic writing skills. Grammarly not only improves writing accuracy and quality but also boosts students' confidence and efficiency. The supportive role of educators in promoting AI tools is essential for successful integration. As AI technology continues to evolve, its potential to revolutionize education by providing personalized, immediate feedback and facilitating long-term learning becomes increasingly apparent. This study provides a foundation for further exploration into the role of AI in education, particularly in developing critical academic skills among students.

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