

CHAPTER I

INTRODUCTION

This chapter discusses the background of the study, the research questions, the research purposes, the research scope, the research significance, the framework of thinking, the hypothesis, and previous studies.

A. Research Background

This study aims to examine the correlation between Indonesian university EFL students' use of AI and their grammar performance. University students frequently use AI applications because they provide immediate feedback and explanations that can support learning. Artificial intelligence, as described by Ilfi and Manaf (2024), is a system that can learn, adapt, and make decisions, similar to humans. Meanwhile, grammar is a crucial part of being proficient in English. To communicate clearly and meaningfully, learners need to practise and understand grammar consistently (Brown, 2000). Therefore, investigating the relationship between AI use and grammar performance is important for understanding how technology may influence students' language competence.

In the current digital era, the rapid advancement of information technology has significantly influenced learning environments. Artificial intelligence, or AI, is one of the recent technological developments that has garnered significant attention in education. AI-based tools are now widely used by university students, notably to support academic tasks such as writing and grammar exercises. To complete their assignments quickly and effectively, students who are actively involved in group learning and research activities need substantial technological support. Thus, integrating AI into academic activities has become an inevitable component of contemporary higher education. education.

In the context of English language learning, Qizi (2023) highlights that grammar is the foundation of English communication, helping students develop logical reasoning and more precise language use. Correct grammar is crucial for clear communication, both orally and in writing. Despite its importance, many EFL

university students still struggle to master grammar (Mayanondha & Soontornwipast, 2020). These challenges stem from several factors, including students' cognitive difficulties in understanding and remembering grammatical rules; limitations in the learning process, such as monotonous teaching methods, limited opportunities to apply knowledge in practice, and insufficient feedback; and environmental factors, including minimal exposure to English and a lack of social support (Jaya & Jabri, 2025). Furthermore, traditional grammar instruction often emphasises rule memorisation rather than meaningful application, which may reduce learners' motivation and limit their ability to demonstrate grammatical use in real communication contexts (Andriani et al., 2021). Thus, more effective and engaging methods are required to help students learn grammar. Technology, especially AI, offers interactive and customised learning opportunities as a potential alternative.

Recent technological advancements have also transformed how students learn grammar, particularly through the growing use of AI-based tools. Applications such as Grammarly, QuillBot, and ChatGPT offer instant corrections, explanations, and alternative sentence structures, making grammar learning more accessible and engaging. In addition, AI tools can analyse language patterns and provide customised feedback, which is especially beneficial in classrooms with varying proficiency levels (Konyrova, 2024). These features make AI appealing to students seeking quick assistance and targeted support beyond the limitations of traditional classroom instruction.

Despite these advantages, concerns have emerged about students' overreliance on AI tools. Many students accept AI-generated suggestions without critically analysing the underlying grammar rules, which may hinder the development of long-term grammar competence (Lee, 2021). This concern is supported by Ellis (2016) and Suryati et al. (2021), who report that students often struggle with grammar due to limited or delayed classroom feedback. While AI can support grammar learning, excessive dependence on such tools may reduce students' meaningful engagement with grammatical forms and principles.

Findings from an initial study at one of Indonesia's state Islamic universities indicate that many students in the EFL program frequently use AI tools to complete grammar exercises. The use of these tools varies in frequency, purpose, and level of dependence, particularly for grammar checking, sentence construction, and instant feedback. Previous studies highlight that AI tools like Grammarly and OpenAI ChatGPT can support grammar checking, improve writing quality, and provide real-time feedback. However, excessive use can lead to over-reliance and reduce students' independent engagement with grammar (Lalira et al., 2024). These patterns suggest a possible relationship between students' frequency of AI use and their grammar performance, particularly in exercises completed without AI assistance.

Previous studies on AI in language learning have generally emphasised the positive perceptions and motivational effects of AI tools. Students appreciate instant feedback (Gayed et al., 2022), feel more confident when writing (Waziana et al., 2024), and benefit from nonjudgmental, consistent corrections (Kim, 2019). However, most of these studies focus on improving writing skills or overall language proficiency rather than analysing grammar as a separate skill. In addition, relatively few studies examine whether frequent use of AI tools reflects students' grammar performance or reliance on automated assistance. Therefore, a more focused examination of the relationship between AI utilisation and students' grammar performance remains necessary.

Overall, the growing use of AI tools for grammar exercises among university students has raised questions about their impact on grammar skills. Although AI applications enable students to complete grammar exercises more efficiently, it remains unclear whether frequent AI use is associated with improved independent grammar skills or reduced grammar accuracy when technology is unavailable. Therefore, this study aims to find out the correlation between students' frequency of AI use in grammar exercises and their grammar performance. By examining students' AI usage patterns in relation to their performance on grammar assessments conducted without AI assistance, this study seeks to provide empirical evidence on whether AI supports or hinders the development of independent

grammar skills. The findings are expected to provide insights for educators and policymakers on effectively integrating AI into English as a Foreign Language (EFL) grammar instruction.

B. Research Questions

Given the research background, this study formulates the following research questions:

1. What is the EFL university students' frequency of using AI in completing grammar exercises?
2. What is the grammar performance of EFL university students when completing grammar exercises without AI?
3. How significant is the correlation between EFL university students' AI usage frequency in completing grammar exercises and their grammar performance?

C. Research Purposes

The purpose of this research is formulated as follows:

1. To identify EFL university students' frequency of using AI in completing grammar exercises.
2. To examine EFL university students' grammar performance when completing grammar exercises without AI.
3. To find out the correlation between EFL university students' frequency of using AI in completing grammar exercises and their grammar performance.

D. Research Significance

This study is expected to make valuable theoretical and practical contributions.

1. Theoretical Significance:

The results of this study are expected to help build on the current state of knowledge on AI integration in language learning, especially as it relates to grammar instruction for EFL university students. This study can contribute to a better understanding of how AI influences grammar development in the context of learning English as a foreign language (EFL) by offering empirical insights into the relationship between students' frequency of AI use and their grammar performance. Additionally, future researchers investigating AI-assisted language learning,

particularly in grammar and other English abilities, can use this study as a reference.

2. Practical Significance:

This study can help English lecturers identify students' levels of grammatical performance. In other words, it provides valuable information that encourages lecturers to pay closer attention to students' grammatical performance and to consider integrating AI tools effectively into grammar-learning activities.

E. Research Scope

This study found out the relationship between EFL university students' performance on grammar tasks and the frequency with which they use AI. The participants are grammar-trained second-semester English education students in an EFL setting. To determine the relationship between the two variables, a correlational quantitative design is employed. Students' frequency of using AI is gathered via a questionnaire, and their performance on a controlled grammar test is evaluated without the help of AI. This study does not attempt to establish a causal relationship between the variables, nor does it use any experimental manipulation or therapeutic methods. Instead, it concentrates on establishing the strength of the connection between students' use of AI and their grammar performance.

F. Conceptual Framework

Grammar is essential for learning a language, especially English, because it provides the structural basis for clear, well-organized communication. According to Halliday (2004), grammar is the primary unit of language processing that creates and reflects meaning in spoken and written language. Grammar is crucial to language understanding and communication because it enables students to construct sentences that accurately convey actions (verbs), topics (nouns), and additional information (adverbs).

AI is a modern technology that has advanced quickly in recent years and is frequently employed in many academic and commercial domains. It describes the capacity of digital technologies or computerized systems to carry out tasks that are normally associated with human intelligence. According to Copeland (2019), the term "AI" is often used to refer to systems that demonstrate cognitive skills similar

to those of humans, such as reasoning, generalization, and experience-based learning. AI makes it possible for software, computers, and computer-controlled robots to think like humans. AI is the capacity of computers to learn from data rather than just carry out explicit commands (Sullivan, 2018). Students are using AI tools more frequently in language learning to help with academic tasks and grammatical practice. Based on usage patterns and learners' skill levels, AI-based applications can offer real-time corrections, adaptive exercises, and individualized feedback (Hwang et al., 2020). When combined, these perspectives show that AI has become an important teaching tool that can improve students' language acquisition through interactive learning opportunities, customized feedback, and adaptive support.

In grammar learning, previous studies have repeatedly demonstrated that AI enhances students' grammatical performance. For instance, Kim (2019) examined the use of AI chatbots at a Korean university and found that students who practised grammar with AI chatbots scored better than those who practised with human partners, highlighting the superiority of AI-mediated interaction. In a similar vein, Waziana et al. (2024) found that students were more likely to write and improve their abilities when they received prompt grammatical feedback. Schmidt-Fajlik (2023), who compared ChatGPT with Grammarly and ProWritingAid and found that ChatGPT provides more thorough grammatical support for Japanese learners of English, provides further evidence. Taken together, these findings suggest that AI can aid grammar acquisition by offering timely feedback and tailored support. However, further research is needed to determine whether students' grammatical proficiency across various EFL learning environments is related to the frequency of AI use.

Based on these empirical findings, this study's conceptual framework posits that students' learning behavior, particularly the frequency with which they use AI tools, can influence their English grammar performance. In today's digital learning environment, college students increasingly rely on applications such as Grammarly, QuillBot, and ChatGPT for grammar exercises. While these tools can support learning by providing instant corrections and explanations, over-reliance can reduce students' cognitive engagement with grammar rules. From a behavioral and

cognitive learning perspective, AI can reinforce accurate grammar patterns through timely feedback, or, conversely, limit deeper learning when corrections are passively received without reflective processing.

Within this framework, the core assumption is that students who use AI constructively, such as to check for errors, understand explanations, or practice self-correction, are more likely to develop stronger grammar skills. At the same time, those who rely heavily on AI to generate answers may struggle to demonstrate their knowledge of grammar independently. Therefore, this framework argues that the quality and frequency of students' AI use directly influence their grammar performance. This study can then explore whether different patterns of AI dependence correlate with higher or lower levels of grammar proficiency and identify the benefits and potential weaknesses of AI-supported grammar learning in relation to students' independent grammar performance.

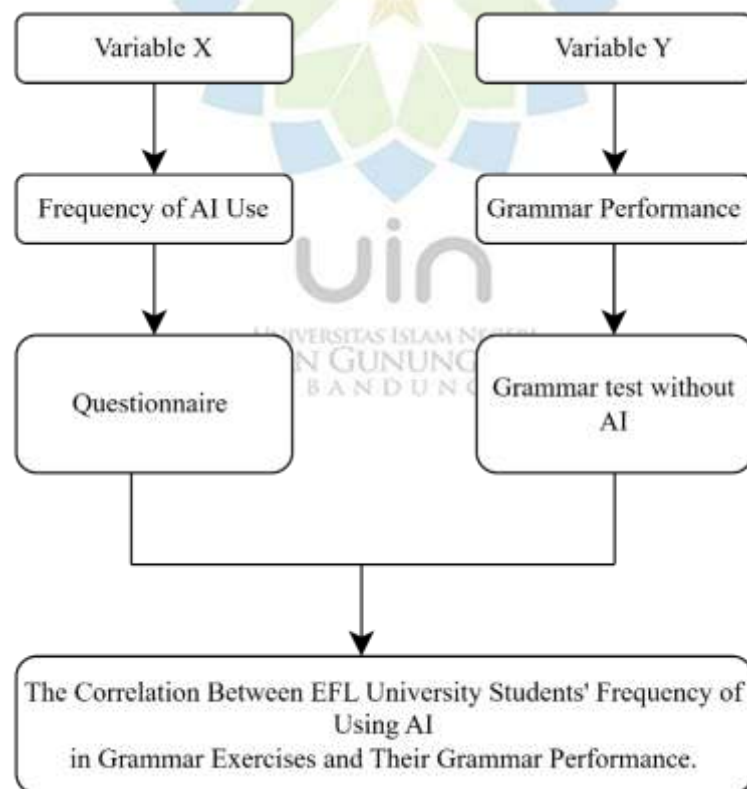


Figure 1. 1 Conceptual Framework

G. Hypothesis

This study involves two variables: X and Y. Variable X, the frequency of AI use by students in grammar exercises, indicates how often students use AI tools when completing grammar assignments. Meanwhile, variable Y, students' grammar performance, reflects students' level of grammatical proficiency as measured by a grammar test administered without AI tools. Based on these variables, the research hypothesis is formulated as follows:

- a. Null hypothesis (H_0): There is no significant correlation between EFL university students' AI usage frequency in completing grammar exercises and their grammar performance.
- b. Alternative hypothesis (H_a): There is a significant correlation between EFL university students' AI usage frequency in completing grammar exercises and their grammar performance.

H. Previous Study

Previous research provides a basis for examining the correlation between students' frequency of AI use and their grammar performance. Several studies have explored the role of AI tools in language learning, particularly in grammar acquisition. However, no study has examined the correlation between the frequency of AI use and grammar performance among college students. The following studies support the relevance of the current research.

The first study was conducted by Kim (2019), who examined how AI chatbots affected the English grammar proficiency of Korean college students. Seventy undergraduate students enrolled in a General English course participated in this study. They were randomly assigned to two groups: one using chatbots and the other engaging in human interaction. Over 16 weeks, the human group interacted with a human chat partner, while the chatbot group interacted with an AI chatbot. Independent t-tests were used to analyse the pre- and post-tests, and the findings showed that both groups' grammar abilities improved significantly. However, the chatbot group showed greater improvement, demonstrating the effectiveness of chatbot-assisted learning. These results are relevant to current studies because they show how AI-based interactions might enhance students' grammar.

Yasa (2025) conducted the second study, which examined how students used and perceived AI grammar-checking tools while studying English grammar. Thirty fourth-semester students in the English Education program participated in this study, which employed a descriptive quantitative methodology. The findings showed that most students regularly used AI grammar-checking tools, such as Grammarly and QuillBot, and viewed them as beneficial for identifying mistakes, improving their writing, and learning from feedback. This study shows that AI grammar checkers can be useful resources for learning grammar. This research fills a gap in the literature by examining whether students' regular use of AI tools affects their grammar performance without technology.

The third study, conducted by Azwar and Sujarwati (2025), examined how ChatGPT-integrated learning affected students' English grammar performance and their perceptions of using it. Over six weeks of training, 60 students were divided into an experimental and a control group in this quasi-experimental study. The findings showed that while both groups made progress, students in the ChatGPT group outperformed those in the control group in grammar. Although most participants viewed ChatGPT's assistance with grammar acquisition positively, concerns about over-reliance and reduced critical thinking also emerged. These results illustrate the possible advantages and disadvantages of AI-supported grammar learning, making them relevant to the current investigation.

In the fourth study, Sari and Lestari (2025) find out how well AI-based feedback improved EFL students' grammatical accuracy in writing compared with standard teacher feedback. Over six weeks, 60 EFL students were split into experimental and control groups in this quasi-experimental study. The results showed that students receiving AI-based feedback achieved significantly higher grammatical accuracy scores than those receiving teacher feedback. Findings also showed that students who received AI feedback paid closer attention to errors and were more engaged in self-correction. This study demonstrates that AI-based feedback systems, such as Grammarly and GPT-powered checkers, can effectively support conventional teaching methods. It also highlights how these tools can support students' learning autonomy while serving as useful additions to

conventional teaching techniques. However, rather than examining long-term retention or students' reliance on AI support, areas that need more research, this study focused primarily on comparative effectiveness.

In general, earlier studies indicate that AI technologies can benefit English grammar learning. AI-supported learning and feedback can improve students' grammar performance and accuracy, according to studies by Kim (2019), Azwar and Sujarwati (2025), and Sari and Lestari (2025). Similarly, Yasa (2025) found that students view AI-based grammar checkers as useful for identifying errors and enhancing their language proficiency. These findings suggest that AI has considerable potential to support grammar instruction in an EFL context. Nevertheless, most prior research has focused on student viewpoints, the effectiveness of AI-assisted training, or comparisons between AI-supported and traditional learning approaches. There has been little focus on the relationship between students' grammar proficiency and the frequency of AI use. Thus, this study seeks to close this gap by examining whether there is a correlation between students' use of AI and their grammar performance among EFL students.

