

CHAPTER I

INTRODUCTION

1.1 Research Background

The rapid advancement of artificial intelligence (AI) has emerged in the English language learning (Novita, 2023; Shomotova et al., 2024). Various AI tools are now available to support the learning process. These include intelligent tutoring systems, grammar correction tools, and chatbots powered by Natural Language Processing (NLP), which allow students to receive immediate feedback on their language (Awalin et al., 2023; Lalira et al., 2024; Rukiati et al., 2023). In addition, AI can help analyze students' learning styles and provide automatic assessments of student learning performance (Du & Daniel, 2024; Hooda et al., 2022). This creates the potential for AI to increase the effectiveness of learning by adjusting personalized materials to the needs of individual students.

Although AI offers various benefits in the grammar learning process, its use does not yield the same effective results for all students (Lalira et al., 2024). Various individual factors, such as gender, self-confidence level, digital skills, and psychological barriers, can influence how students use this technology. Some students rely heavily on AI in learning to help them complete academic tasks (Razak et al., 2017; Zhai et al., 2024) while others feel less comfortable or even skeptical about relying on AI to help them in learning English, for reasons of privacy and user control (Chan & Hu, 2023), to the logical flow of writing and plagiarism (Jaya & Susyla, 2024). Therefore, a variety of individual factors significantly influence how students use AI-based applications in English grammar learning. Gender differences are one of the factors that contribute to the adoption of AI in learning

English grammar. Several studies found that males tend to use various AI in the English learning process compared to females (Fazal et al., 2024; Gasaymeh et al., 2024; Møgelvang et al., 2024). Females are more selective and careful in involving AI in their learning, considering plagiarism (Møgelvang et al., 2024). Moreover, both showed good results in the form of improving their language competence through the use of this technology (Fazal et al., 2024; Gasaymeh et al., 2024), which reflects that both consider AI to be useful for improving the quality of writing and academic performance of students in language learning (Iddrisu et al., 2025). In addition, males using AI are influenced by supportive performance expectations, but females' intentions to use AI are influenced by their anxiety (Bolívar-Cruz & Verano-Tacoronte, 2025). Thus, psychological factors in the form of academic anxiety also indicate the adoption of AI in English learning.

Academic anxiety is an excessive worry that includes students' fear of their academic performance in learning at school (Fishstrom et al., 2022). This anxiety contributes negatively to academic performance, including the use of technology such as the use of AI in English language learning (Azeem, 2018; Li & Thien, 2025; Zhou, 2024). Students who feel anxious and do not believe in their potential academic performance tend to use AI to help them with their assignments. However, if this is used as a shortcut without being selective about understanding the concept, it will have a negative impact on their academic performance (Yaling et al., 2024; Zhang et al., 2024). Conversely, students who have low self-anxiety show readiness and a positive outlook in using AI in their learning process (Acosta-Enriquez et al., 2025). Moreover, academic anxiety is also influenced by gender differences, where females experience higher anxiety than males in language

learning (Khouya, 2025; Rahmawati et al., 2024; Fajaryani et al., 2024), including lower academic results in writing (Fajaryani et al., 2024). However, in speaking class, males experience higher anxiety with lower academic results compared to females (Istiqomah, 2024). Thus, gender and academic anxiety appear to be closely related in influencing how students engage with AI in English learning, and their effects differ across language skills.

Various previous studies highlighted the influence of gender on preferences for the use of AI in language learning. Some studies show significant differences in students' use of AI based applications between the male and female genders (Fazal et al., 2024; Shomotova et al., 2024). Other findings discuss that factors such as technology experience, anxiety, and self-confidence in AI are more influential than gender differences themselves (Jomaa et al., 2024). Some studies even reported that male students used AI more frequently than females (Fazal et al., 2024; Gasaymeh et al., 2024), while others found no significant gender differences (Joma et al., 2024), indicating that results remain inconsistent and potentially shaped by psychological factors such as academic anxiety. Moreover, academic anxiety has been shown to affect students' academic performance, with several studies identifying a negative correlation between academic anxiety and AI use or students' achievement in English learning (Azeem, 2018; Dauba & Dauba, 2024; Wen et al., 2024). Findings on the relationship between academic anxiety and AI use also remain inconclusive, as some study report significant (Li & Thien, 2025; Wen et al., 2024), while others indicate that its effect is situational and relatively limited often shaped by factors such as perceived usefulness, technological complexity, and learning conditions (Santosa, 2025; Schiavo et al., 2024). However, most of these

studies frequently examine the anxiety on students' performance in speaking and writing (Fajaryani et al., 2024; Istiqomah, 2024), while few have investigated its influence in the English Grammar Course. Therefore, there is still a gap in the literature regarding how the interaction between gender and academic anxiety on students' use of AI in the English Grammar Course.

Furthermore, previous studies tend to place AI as an independent variable that influences the dependent variable, namely students' English skills and their improvement, with a qualitative and mixed-method approach (Jaya & Susyla, 2024; Waziana et al., 2024; Xiao et al., 2025). There are still a few studies that use AI as a dependent variable, indicating the need for further investigation into the factors associated with students' use of AI based applications in English grammar learning. This position is important to investigate because grammar is a component of language competence and a foundation for accurate speaking and writing (Ana & Ratminingsih, 2012; Dewi et al., 2020). Unlike speaking and writing, grammar learning places greater emphasis on sentence accuracy and structural correctness, making AI-based applications particularly relevant for activities that require immediate corrective feedback and level accuracy (Awalin et al., 2023; Lalira et al., 2024). In this context, AI utilization becomes more visible and measurable because grammar-related tasks frequently involve direct correction and evaluation of linguistic forms. In addition, compared with speaking and writing, grammar has received far less attention in previous studies. This limited focus makes the English Grammar Course a meaningful setting for examining how gender and academic anxiety relate to students' use of AI-based applications. Accordingly, this study investigates the association of gender and academic anxiety on fourth-semester

students' use of AI-based applications in the English Grammar Course. This study has academic urgency in filling the research gap related to the integration of AI in language learning by considering individual factors of students, namely gender differences and their academic anxiety. Thus, the results of this study are expected to contribute to the development of more inclusive, adaptive, and effective AI-based application utilization in the context of grammar learning in higher education.

1.2 Research Problem

The advances of technology, such as AI, have led to various innovations in English language learning, without exception, in the aspect of grammar. AI supports language learning by providing students with the convenience of receiving automatic feedback, improving grammar accuracy, and personalizing according to their individual needs. However, the effectiveness of using this technology differs between male and female students as a result of variations in its use among students. This variation relates to how they utilize and also how apprehensive and fearful they are of receiving the results. This suggests that AI use is influenced by individual factors, including gender and academic anxiety.

Previous studies emphasize that gender can be associated with students' preferences and level of acceptance of AI in English language learning. Male students tend to be more active in utilizing AI than female students, who are inherently more cautious in its use, especially regarding the avoidance of plagiarism and dependency (Møgelvang, 2024; Cruz, 2025). On the other hand, some studies do not find any significant differences between male and female AI use,

emphasizing that factors such as confidence in AI and technological experience are more influential (Joma et al., 2024).

Conversely, academic anxiety has been shown to negatively impact students' academic performance, including the utilization of AI technology for learning. Students with high levels of academic anxiety tend to use AI more frequently to complete assignments, with deficiencies in understanding grammatical concepts that may adversely affect their language skills (Zhang et al., 2024; Acosta-Enriquez et al., 2025). Further research shows that female students experience higher academic anxiety than males in learning English writing. In contrast, male students show higher anxiety in speaking skills (Fajaryani et al., 2024; Istiqomah, 2024).

Although many studies have examined the role of gender and academic anxiety in English language learning, there is still little intention to highlight how the interaction between these two factors associated with the use of AI in the English Grammar Course. Most of the previous studies have emphasized AI as an independent variable affecting college students' English skills through qualitative and mixed methods approaches (Jaya and Susyla, 2024; Waziana et al., 2024). However, there are still a few studies that make AI a dependent variable that is influenced by individual student factors, such as gender and academic anxiety, through a quantitative approach with regression methods.

1.3 Research Scope

This research was limited to university students who use AI-based applications in English Grammar Courses, not including secondary school students

or any professional group. In terms of variables, this study only examines the association of gender and academic anxiety on the use of AI, without further discussing other factors such as students' learning motivation or technological experience.

Moreover, this study used a quantitative approach with the multiple linear regression (MLR) method through a questionnaire, so it did not explore qualitative factors that may affect the results. In addition, this study only focuses on AI applications that support grammar, such as Grammarly, QuillBot, ChatGPT, Claude AI, ProWritingAid, and Gemini AI, without covering other aspects of English learning or ethical issues that may arise in the use of AI, such as plagiarism. With these limitations, the study aimed to produce specific and targeted findings regarding the factors that influence the use of AI in English Grammar Courses, namely gender factors and students' academic anxiety.

1.4 Research Questions

This study has several research questions to help guide the writing, including:

1. Is there any significant association of gender on fourth-semester students' use of AI-based applications in English Grammar Courses?
2. Is there any significant association of academic anxiety on fourth-semester students' use of AI-based applications in English Grammar Courses?
3. Is there any simultaneous association of gender and academic anxiety on fourth-semester students' use of AI-based applications in English Grammar Courses?

1.5 Research Objectives

This research aimed to examine the influence of gender and academic anxiety on the use of AI-based applications in the English Grammar Course. More specifically, this study has the following objectives:

1. To investigate the association of gender on fourth-semester students' use of AI-based applications in English Grammar Courses.
2. To investigate the association of academic anxiety on fourth-semester students' use of AI-based applications in English Grammar Courses.
3. To evaluate the association of gender and academic anxiety on fourth-semester students' use of AI-based applications in English Grammar Courses.

1.6 Significance of Research

This research is expected to contribute to various aspects, both theoretically and practically:

1.6.1 Theoretical Significance

This research is expected to contribute to expanding the application of Horwitz et al.'s (1986) theory of Foreign Language Classroom Anxiety, which originally applied generally in foreign language learning, to be contextualized in English grammar learning. This adaptation specifically examined how academic anxiety is associated with student engagement in using AI-based applications such as Grammarly, QuillBot, ChatGPT, etc., and developed a relevant academic anxiety instrument within the context of English Grammar Courses. Furthermore, this study employs the Technology Acceptance Model (TAM) proposed by Davis (1989) and

the User Readiness Model (URM) developed by Parasuraman (2000) within the context of English grammar instruction, thereby generating instrument items pertinent to this domain. This research provides a novel perspective on the psychological interactions of students with technology acceptance in the context of English Grammar Course.

1.6.2 Practical Significance

The findings of this study are expected to provide various practical benefits for the various parties involved in the integration of AI into English language learning:

1.6.2.1 For Students

This study encourages students to critically reflect on the use of AI-based tools in English grammar learning. By exploring the relationship between demographic factors, individual psychological traits, and technology use, making students understand how these factors may influence their learning strategies so that they can optimize AI as a supportive academic tool to overcome linguistic barriers in their learning environment.

1.6.2.2 For English Language Educators

The findings of this study are intended to serve as a practical guide for educators in integrating AI for effective pedagogical strategies. This study aims to help instructors determine whether specific learning interventions are needed for different student groups. Additionally, it is expected to provide information for creating a more inclusive classroom environment, where AI literacy can be taught

equitably to meet the functional needs of all students in the English Grammar course.

1.6.2.3 For Institutions (Undiksha)

This study is expected to help Undiksha evaluate how students use its digital infrastructure to support the creation of an academic environment with equitable access to technology and the use of AI in learning.

1.6.2.4 For Future Researchers

This study serves as a foundational reference for researchers interested in the relationship between demographic, psychological variables, and technology acceptance. It also offers a basis for future research to investigate whether the patterns of technology use identified in this context are consistent across different cultural or institutional environments

