

CHAPTER I

INTRODUCTION

1.1 Background of The Study

Over the past few years, the rapid development of generative artificial intelligence (AI) has changed how university students engage with scientific writing, as AI-based writing assistants now allow them to generate ideas, draft outlines, and refine academic texts with unprecedented ease (Khalifa & Albadawy, 2024; (Liebling et al., 2025). Within a short period, AI use as a source of reference and writing support has shifted from an emerging trend into common practice among university students (Ifenthaler et al., 2024 in Xu, 2025). This pattern is also evident locally, as students at the English Language Education Department of Universitas Muhammadiyah Ponorogo have been reported to use AI tools such as QuillBot, Grammarly, and Google Translate to support their language and writing tasks (Syalsafira et al., 2025). This matter is occurring faster than higher education institutions' capacity to guide its appropriate use (Kim et al., 2025 in Chen & Gong, 2025).

The urgency of examining this phenomenon lies in the central role scientific writing plays in academic life, where difficulties with organization, argumentation, and academic language persist across disciplines (Barrett & Pack, 2023; Rahimi & Fathi, 2022). As AI tools become an almost default companion in completing writing assignments and theses, students' dependence on these tools is forming before clear academic norms, ethical boundaries, or pedagogical guidance has been firmly established (A. V. Y. Lee et al., 2023).

Unlike earlier educational technologies that developed gradually, generative AI has been adopted rapidly and on a large scale, leaving open the urgent question of how it is reshaping the very process by which students learn to write scientifically (Huang et al., 2022). This shift is consistent with the broader trend observed among Indonesian EFL learners, whose language development increasingly occurs within dynamic digital spaces rather than solely in formal classroom settings (Ramadhani et al., 2026). Investigating this issue now, while students' practices and perceptions toward AI are still forming, allows researchers and educators to anticipate, not merely react to, its academic and pedagogical consequences (Peciuliauskiene et al., 2022).

AI offers several documented benefits for academic writing, assisting students in generating ideas and enhancing content structuring, literature synthesis, data management, editing, and ethical compliance (Khalifa & Albadawy, 2024). AI-driven citation and reference management tools further help students organize and format their reference lists more systematically, positioning AI as a potential reference-support system in academic writing practices (Liebling et al., 2025); Ifenthaler et al., 2024 in Xu, 2025). However, these benefits come with risks increasingly raised in current discourse: reliance on AI may narrow students' own writing practices, self-regulation strategies, and independence from technological support (Zhai et al., 2024), while also affecting their confidence, motivation, and perception of their own writing ability (Ali et al., 2023). This dual character, AI as both enabler and risk to independent writing competence, is what makes the phenomenon worth

investigating from students' own perspective, rather than from technical performance alone (Huang et al., 2022).

Despite growing literature on AI in academic writing, most existing studies emphasize technical and linguistic outcomes, such as improved writing fluency and reduced cognitive load, including among students who struggle with academic English (Miccoli et al., 2023). Comparatively little attention has been paid to how students themselves perceive and make sense of AI's role in their own scientific writing process across different disciplinary backgrounds (Jasman et al., 2025). This gap matters because students' perceptions influence how AI is actually integrated into their beliefs, writing behaviors, and learning environment (Mujiono, 2024), and without it, recommendations for responsible AI integration risk resting on technical assumptions about efficiency and performance gains, when in fact students' own lived experience with these tools often reveals more complex concerns, such as worries about over-reliance and the accuracy of AI-generated content, concerns that purely technical framings tend to overlook (P. Wang et al., 2025).

Because the influence of AI on scientific writing operates simultaneously through personal, behavioral, and environmental factors, this gap is best examined through Bandura's Socio Cognitive Theory, which explains learning as the product of reciprocal interaction between these three factors, a process known as triadic reciprocal determinism (Schunk & DiBenedetto, 2023). Within this framework, self-efficacy refers to students' beliefs in their capability to complete writing tasks (Cheng et al., 2026); observational learning explains how students model the organizational patterns, language structures, and

referencing styles generated by AI systems (Vandermeulen et al., 2024); and self-regulation captures how students manage their writing strategies and dependence on AI support (Lee et al., 2023). This indicates that AI-assisted writing should be examined not merely as a tool-use issue, but as a learning process shaped by the interplay of students' beliefs, behaviors, and the technological environment in which they write (Huang et al., 2022).

Given these theoretical and empirical foundations, this study examines how university students from different academic disciplines perceive and experience AI use in scientific writing, and how this relates to their self-efficacy, observational learning, and self-regulation under Socio Cognitive Theory, aiming to provide a broader understanding of how these mechanisms operate in this new technological context of academic writing.

1.2 Statement of The Study

Based on the background above, the problems of this study are formulated as follows:

1. How do students from different study programs perceive the role of artificial intelligence in supporting their scientific writing?
2. How does the use of artificial intelligence influence students' self-efficacy, observational learning, and self-regulation in scientific writing, viewed through Bandura's Socio Cognitive Theory?
3. How do personal, behavioral, and environmental factors interact when students use artificial intelligence for scientific writing?

1.3 Objectives of The Study

Based on the statement of the study above, the objectives of this study are:

1. To describe how students from different study programs perceive the role of artificial intelligence in assisting their scientific writing.
2. To explain how the use of artificial intelligence affects students' self-efficacy, observational learning, and self-regulation in scientific writing based on Bandura's Socio Cognitive Theory.
3. To analyze the interaction among personal, behavioral, and environmental factors when students use artificial intelligence for scientific writing.

1.4 The Contributions of The Study

This study is expected to provide practical, theoretical, and methodological contributions, as follows:

1.4.1 Practically

This study offers practical insights into how students from different study programs use AI tools in scientific writing. The findings can help lecturers identify students' writing difficulties and guide responsible AI integration that strengthens, rather than replaces, students' own writing skills.

1.4.2 Theoretically

This study extends Bandura's Socio Cognitive Theory to a new context, AI-assisted scientific writing. By examining how

personal beliefs, environmental influences, and writing behaviors interact when students use AI, it contributes to discussions on learning in digital environments and on how self-efficacy, observational learning, and self-regulation operate once technology becomes part of writing.

1.4.3 Methodologically

This study demonstrates how a combined qualitative approach, using interviews and data artifacts, can explore students' experiences with AI in academic writing. Applying Bandura's Social Cognitive Theory as a coding framework offers a model for future researchers investigating human-AI interaction in educational settings.

1.5 Scope and Limitation

This study focuses on how university students from different study programs use artificial intelligence to support their scientific writing. The scope is limited to students with experience using AI for academic purposes who are willing to share their writing practices through interviews; it did not examine AI tools' technical performance or compare platforms. Because the data show findings reflect students' perceptions rather than measurable outcomes, and the qualitative design means results cannot be generalized, it instead offers a detailed picture of how AI use intersects with self-efficacy, writing strategies, and learning environments within Socio Cognitive Theory.

1.6 Definition of Key Term

Artificial Intelligence (AI) : AI refers to tools that help generate, revise, or assist with written text using machine learning and natural language processing. In academia, they support students by improving clarity, coherence, and grammatical accuracy in their writing (Cooperman & Roberto A. Brandão, 2024).

Scientific Writing : Scientific writing is a form to communicate scientific information and follows specific rules. Authors must organize ideas, present evidence, and adhere to academic conventions for clarity. It documents research findings, ensuring they are understood and verifiable (Rose Khamusali Okwemba, 2022).

Socio Cognitive Theory : Social Cognitive Theory, created by Albert Bandura, explains learning through personal, behavioral, and environmental factors. Key components include self-efficacy, observational learning, and self-regulation (Graham, 2022).