CHAPTER I
INTRODUCTION

1.1 Background of the Study

Critical thinking is broadly acknowledged as an essential competency in contemporary education, serving as a fundamental predictor of academic success and effective decision-making in everyday life. In the twenty-first century context, the ability to critically evaluate information, analyse arguments, and synthesize knowledge is regarded as one of the core "super skills" necessary for navigating an increasingly complex and dynamic global landscape [1]. This emphasis is reflected in current educational reforms worldwide, including Indonesia's Merdeka Curriculum, which explicitly promotes the development of 4C competencies, Critical Thinking, Creativity, Communication, and Collaboration as foundational skills required to prepare students for future academic and societal challenges [2] [1].

Within the Merdeka Curriculum framework, student-centred pedagogical approaches are prioritized to foster inquiry, problem-solving, and higher-order thinking. Critical thinking is therefore positioned not as a supplementary ability, but as a central learning outcome embedded across disciplines, including English language education [3] [4]. By cultivating critical thinking, learners are encouraged to move beyond passive information acceptance toward active intellectual engagement, characterized by questioning assumptions, evaluating evidence, and constructing logically supported conclusions [5]. These cognitive competencies are particularly significant in higher education, where students are expected not only to reproduce existing knowledge but also to engage with it critically and contribute meaningful insight to their respective fields of study.

Beyond academic contexts, critical thinking skills are equally essential in daily life. In an era marked by an overwhelming flow of information and the widespread dissemination of misinformation, the ability to evaluate the reliability of sources, differentiate factual information from personal opinions, and make well-informed decisions has become increasingly important for responsible citizenship and individual well-being [6]. Individuals who consistently apply critical thinking in their daily activities are better prepared to address complex problems, make prudent financial choices, assess healthcare alternatives, and engage actively in democratic processes. Consequently, the incorporation of critical thinking into formal education and lifelong learning programs contributes not

only to educational advancement but also to broader societal objectives, particularly the cultivation of informed, reflective, and actively engaged citizens [7]. Given the recognized significance of critical thinking in academic and real-life contexts, educators continue to confront the challenge of implementing instructional strategies that systematically cultivate these skills. Although conventional teaching methods provide essential foundations, they often fail to sustain the level of cognitive engagement necessary for meaningful critical thinking development, particularly among students with limited intrinsic motivation or prior exposure to evaluative reasoning.

The rapid integration of artificial intelligence tools into education introduces both potential benefits and pedagogical concerns. While AI technologies expand access to information and can facilitate various aspects of learning, their contribution to critical thinking largely depends on the manner in which learners interact with them [8]. This issue is especially evident in the use of generative AI applications such as ChatGPT, which generate complex textual responses based on user prompts. ChatGPT was employed as the primary generative AI platform in this study due to its widespread use among students in the research setting. The platform provides free access, an interactive conversational environment, and the ability to support iterative prompt refinement, making it a realistic representation of the AI-assisted writing practices that students frequently adopt outside formal educational contexts. In addition, ChatGPT can generate coherent and contextually relevant responses based on different levels of prompt specificity. This capability makes it particularly suitable for examining the extent to which variations in prompt quality influence students' critical thinking processes during AI-assisted writing activities.

In the absence of structured guidance, students may rely on AI outputs passively, thereby circumventing rather than strengthening critical thinking processes [9]. In this context, prompt engineering emerges as a promising instructional strategy that may connect AI utilization with the deliberate development of critical thinking skills.

The advantages of prompt engineering are not limited to improving the quality of outputs generated by artificial intelligence systems. When applied within a pedagogical framework, prompt engineering can function as an effective means of fostering the development of critical thinking skills. The formulation of well-constructed prompts requires students to engage deeply with their learning objectives, analyse task demands, assess the quality of AI-generated responses, and continuously refine their prompts through critical reflection [10]. Previous studies suggest that prompt engineering comprises three essential elements, namely content knowledge, critical thinking, and

iterative design [10]. Among these components. Critical thinking plays a central role, as students are required to evaluate the accuracy of AI outputs, identify potential biases or hallucinations, validate information using credible sources, and integrate AI-generated content with their own understanding and reasoning.

In educational settings, prompt engineering presents several pedagogical benefits when implemented in a deliberate and structured manner. First, it can support students' writing development by facilitating idea generation, enriching vocabulary use, organizing ideas coherently, and providing immediate feedback on written work [11]. Second, prompt engineering encourages metacognitive awareness, as students must clearly articulate their cognitive processes and learning needs when designing prompts [12]. Third, it creates opportunities to enhance critical evaluation skills, particularly when students are required to assess the relevance, accuracy, and overall quality of AI-generated responses [6]. Nevertheless, the educational effectiveness of AI tools is highly dependent on the manner in which learners engage with them. Previous research indicates that students frequently demonstrate an early tendency to depend excessively on AI-generated content, often accepting suggested output without engaging in critical evaluation, especially among learners who possess limited confidence in their writing skills [13]. When AI is used merely as a shortcut to bypass cognitive and writing processes, it may hinder the achievement of learning outcomes. In contrast, when integrated into pedagogical approaches that prioritize engagement and reflective use, AI tools have the potential to strengthen both writing proficiency and critical thinking skills. Rizkiani et al. reported in their six-week intervention study that, when supported by appropriate pedagogical scaffolding, students were able to shift from passive reliance toward a more strategic and critically engaged use of AI-based technologies [2].

Despite the acknowledged potential of AI-assisted learning, observations from authentic classroom settings indicate substantial challenges in students' current patterns of engagement with these technologies. During the researcher's Teaching Practicum Program (Praktik Pengalaman Lapangan/PPL), a recurring issue was identified across seventh classes at SMAN 1 Dawarblandong. In the completion of writing assignments, the majority of students exhibited a high level of dependence on AI-based tools, particularly ChatGPT. These observations are consistent with findings reported in recent empirical studies on the integration of AI tools in EFL writing contexts, which indicate that students tend to rely heavily on AI-generated ideas and engage with such tools in a predominantly passive

manner, often accepting suggested outputs without sufficient critical evaluation [13]. Although the educational use of AI is not inherently problematic, the manner in which students interact with these tools raises serious concerns from a pedagogical perspective.

One of the most prominent issues observed was related to the quality of prompts formulated by students when using ChatGPT. Instead of developing clear, specific, and well-considered prompts that could support meaningful learning, students frequently relied on vague, poorly structured, and overly simplistic instructions. Many students merely copied the entire task prompt into ChatGPT without providing contextual information, refining the request, or specifying their learning objectives. Others simply use structured ChatGPT to "write an essay about [topic]" without defining parameters such as perspective, analytical depth, or alignment with course materials. This pattern reflects what can be described as *prompt laziness*, characterized by an inclination to seek immediate answers rather than engaging in the cognitive processes required for effective learning.

Such superficial engagement with AI tools resulted in observable negative effects on both writing quality and learning outcomes. Texts generated from inadequately constructed prompts were typically generic in nature, demonstrated limited analytical depth, and failed to reflect students' genuine understanding or independent critical thinking. These tendencies reflect evidence from empirical studies showing that students who depend extensively on AI tools without engaging critically tend to produce essays that are structurally sound yet lack analytical depth and fail to demonstrate thorough critical evaluation [13]. When these AI-generated texts were submitted with minimal revision or personalization, students' writing displayed several recurring weaknesses, including a lack of original analysis, insufficient engagement with course content, weak argumentation and logical coherence, and minimal evidence of critical thinking skills [3].

Moreover, an initial examination of students' writing assignments indicated that a considerable number of learners encountered difficulties in fulfilling essential indicators of critical thinking in their written work. Recent studies on the integration of AI tools in EFL writing contexts support these findings. Rizkiani, et al. reported that students often exhibit a tendency to accept AI-generated content uncritically during the early stages of AI use, with limited evaluative engagement. Employing a comprehensive critical thinking framework, which emphasizes clarity of expression, logical reasoning, strength of argumentation, and effective integration of evidence, Rizkiani et al. found that students experienced notable challenges in formulating clear thesis statements, constructing coherent and well-developed arguments, organizing ideas systematically, and synthesizing

information from multiple sources. These difficulties closely parallel the patterns identified during the researcher's teaching practicum. Although their study demonstrated that AI tools such as ChatGPT and Grammarly have the potential to improve writing quality when used strategically and reflectively, it also highlighted that students frequently over-relied on AI-generated suggestions, thereby constraining their critical engagement in the writing process [13].

These findings correspond with broader trends reported in educational research. Results from the Programme for International Student Assessment (PISA) 2022 indicate that Indonesian students' literacy achievement remains substantially below the OECD average. Indonesia recorded a reading literacy core of 359, markedly lower than the OECD mean score of 476, placing the country 69th among 80 participating nations [14]. Furthermore, only 25% of Indonesian students achieved proficiency at level 2 or above in reading, the minimum level required to identify central ideas and draw inferences from texts, compared to 74% of students across OECD countries. This enduring disparity in literacy and analytical performance suggests that a considerable proportion of Indonesian students lack an adequate foundation in critical skills, which are essential for effective academic writing [15].

The coexistence of limited critical thinking abilities and the ineffective utilization of AI tools presents a significant educational concern. Students with insufficient analytical and evaluative capacities are particularly susceptible to using AI technologies in ways that hinder rather than enhance learning outcomes. In the absence of well-developed critical thinking skills, learners struggle to critically assess the quality of AI-generated content, identify potential inaccuracies or biases, evaluate alignment with assignment requirements, and integrate AI-produced information with their own knowledge and reasoning [13]. This challenge is especially pronounced within the framework of the *Merdeka Curriculum*, which prioritizes the development of twenty-first century competencies, particularly the 4C skills, Critical Thinking, Creativity, Collaboration, and Communication, deemed essential for preparing students to meet future academic and societal demands [16].

Considering the challenges identified during the teaching practicum and their convergence with broader trends in educational research, there is a pressing need for empirical investigation into the pedagogical potential of prompt engineering as a means of

improving both critical thinking skills and writing quality among Indonesian senior high school students. Several considerations underscore the timeliness and significance of this study.

First, although international scholarship on AI-supported writing and prompt engineering has expanded rapidly, empirical studies examining their application within Indonesian secondary-level English language classrooms remain limited. Existing Indonesian research has begun to explore the integration of AI tools in EFL contexts [13] [3]. However, investigations are still scarce, notably while Rizkiani et al. conducted a highly relevant study in the Indonesian context, their research was situated at the tertiary level. Moreover, much of the existing international literature has concentrated on higher education or non-Indonesian settings [11], [17], [10]. Given the distinctive features of the Indonesian education system, including curriculum mandates such as the Merdeka Curriculum's emphasis on 4c competencies, variations in resource availability and technological infrastructure, students' literacy levels as reflected in PISA 2022 data, and sociocultural considerations, there is a clear need for context-sensitive research conducted at the secondary level.

Second, while prior studies have examined the relationship between AI tool use and writing quality [13], [18], as well as the link between prompt engineering and critical thinking [6], [10], research that simultaneously investigates the effects of prompt engineering instruction as a distinct pedagogical intervention on both critical thinking and writing quality remains limited. Although Rizkiani et al. explored the influence of AI-assisted writing on students' critical thinking, their focus was on general AI tool integration supported by guided instruction rather than on explicit training in prompt engineering. A deeper understanding of how structured instruction in prompt formulation teaching students to design effective and strategic prompts affects both cognitive processes and writing outcomes is, therefore, essential for the development of comprehensive pedagogical models that harness AI tools to support, rather than compromise learning [13].

Third, the rapid and widespread adoption of AI tools by students, as observed during the teaching practicum and corroborated by findings from Rizkiani et al., has progressed more quickly than the establishment of effective instructional frameworks to guide their use. Although students frequently utilize tools such as ChatGPT, they often do so in ways that circumvent meaningful engagement with learning tasks [13]. This situation highlights

the urgent need for research-informed pedagogical approaches that equip students with the skills to interact with AI technologies critically and productively, positioning prompt engineering not as a shortcut to avoid cognitive effort but as a scaffold for developing deeper analytical and writing competencies [2], [7].

Accordingly, the present study seeks to examine the impact of prompt engineering on critical thinking skills and writing quality among eleventh-grade students at SMAN 1 Dawarblandong. Drawing on recent research on AI integration in EFL writing [13], [18] while addressing identified gaps in secondary-level and prompt engineering-focused studies, this research will concentrate on teaching students to design effective prompts as a distinct and transferable skill. In contrast to earlier studies that emphasized general AI tool use with guided support [13]. The current study investigates whether explicit instruction in prompt engineering can mitigate issues of over-reliance and passive engagement documented in previous research, while concurrently enhancing students' critical thinking and writing abilities. Through this investigation, the study aims to contribute empirical evidence regarding the pedagogical value of prompt engineering as targeted evidence regarding the pedagogical value of prompt engineering as a targeted instructional strategy in Indonesian secondary English language education.

1.2 Research Question

Based on the background discussed previously, the present study aims to examine the following research questions:

1. What is the effect of prompt engineering instruction on the critical thinking skills of eleventh-grade students at SMAN 1 Dawarblandong?
2. What is the effect of prompt engineering instruction on the writing quality of eleventh-grade students at SMAN 1 Dawarblandong?

1.3 Research Objectives

In line with the research question stated above, this study aims to:

1. To investigate the effect of prompt engineering instruction on the critical thinking skills of eleventh-grade students at SMAN 1 Dawarblandong.
2. To examine the effect of prompt engineering instruction on the writing quality of eleventh-grade students at SMAN 1 Dawarblandong.

1.4 Research Significance

This research is expected to contribute both theoretical and practical insights across several dimensions:

1. Theoretical Significance

   This study adds to the expanding literature on the integration of artificial intelligence in English language education by examining the impact of prompt engineering instruction on both critical thinking and writing quality concurrently, thereby addressing an underexplored area in existing research. Although earlier studies have investigated the use of AI tools in writing [13] and the application of prompt engineering in higher education contexts [10], empirical evidence concerning explicit prompt engineering training for secondary-level EFL learners remains limited.

   Furthermore, this research offers empirical insights into the interplay between prompt engineering, critical thinking, and writing quality within the context of Indonesian secondary education, with potential implications for the development of theoretical models of AI literacy instruction. Extending the findings of Rizkiani et al. on passive AI engagement among university students, the present study shifts the focus to younger learners and investigates whether structured instructional interventions can mitigate over-reliance on AI tools observed in prior research [13].

2. Practical Significance

   This study offers evidence-based insights into the effective integration of AI tools in writing instruction by offering practical strategies for teaching prompt engineering, reducing students' over-reliance on AI-generated content, and promoting critical engagement with AI-supported learning. The findings contribute to curriculum development that balances educational technology use with the cultivation of independent critical thinking skills, in line with the Merdeka Curriculum's emphasis on 4C competencies.

   Specifically, the study presents empirical evidence on the effectiveness of prompt engineering at SMAN 1 Dawarblandong, supporting AI literacy integration, teacher professional development, and informed institutional decision-making. Additionally, the results demonstrate that structured prompt engineering instruction enables students to engage with AI tools more critically and strategically, enhancing metacognitive awareness, critical thinking, and writing

quality, while also providing a reference or similar secondary education contexts and future research.

1.5 Research Limitation

This study is confined to eleventh-grade students at SMAN 1 Dawarblandong during the 2025/2026 academic year. It focuses on English academic writing instruction supported by prompt engineering using ChatGPT as the primary AI tool. The investigation examines two main outcomes: critical thinking skills, as reflected in students' written work, and the quality of their writing.

Several methodological and contextual limitations should be acknowledged. The intervention was conducted within a single academic semester and involved convenience sampling from one school, which may restrict generalizability and limit insight into long-term learning effects. Critical thinking was assessed primarily through written products, which may not fully represent students' internal cognitive processes, while writing assessment inevitably involves a degree of subjectivity despite the use of established rubrics.