The Influence Factors of Students Conginitive Process in Writing

Rizky Ummi Thahirah Nasution [1*], Herika Dalimunthe [2], Dinda Sundana [3], Yani Lubis [4]

[1234]Tadris Bahasa Inggris, Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Islam Negeri Sumatera Utara

*Penulis Korespondensi: rizky0304221021@uinsu.ac.id

Abstract. :This study investigates the influential factors that shape students' cognitive processes in writing, focusing on how planning, working memory, attention regulation, and emotional-cognitive elements interact during the composing process. Using a qualitative design with Interpretative Phenomenological Analysis (IPA), the research examined students' lived experiences through interviews, observations, and reflective logs. The findings reveal that cognitive struggles emerge from interconnected challenges, including mental overload, unstable attention, limited memory capacity, and emotional disturbances such as writing anxiety. Students also demonstrated adaptive strategies, particularly in strategic planning and self-monitoring, which helped them navigate cognitive demands. The study concludes that writing instruction must address cognitive processes holistically by integrating structured planning support, memory scaffolding, reflective learning, and emotional regulation. These insights highlight the need for pedagogical approaches that recognize writing as a complex and highly individual cognitive activity. The research contributes to strengthening the theoretical understanding of writing cognition and provides practical guidance for developing more responsive and supportive writing pedagogies.

Keywords: cognitive processes; writing cognition; working memory

1. INTRODUCTION

Writing is a multifaceted cognitive activity that requires the coordination of numerous mental processes, ranging from idea generation and planning to sentence construction, self-monitoring, and revision (Moghaddam et al., 2022). Far from being a purely linguistic skill, writing is fundamentally rooted in cognition, involving both lower-order processes such as vocabulary retrieval and spelling, as well as higher-order processes like reasoning, organization, coherence building, and metacognitive regulation. For students, especially those learning English as a foreign language (EFL), writing is often perceived as one of the most demanding academic skills. This difficulty arises because writing simultaneously draws upon linguistic knowledge, strategic competence, and cognitive capacities that differ widely among learners (Huang & Rawian, 2025). As a result, understanding the factors that influence students' cognitive processes in writing is critical for educators, curriculum designers, and researchers seeking to support more effective writing instruction.

In recent years, research in cognitive psychology, applied linguistics, and educational sciences has increasingly highlighted the role of cognition in shaping writing performance (Kormos, 2023). Models such as Flower & Hayes (1981) Cognitive Process Theory of Writing and Kellogg et al. (2013) Working Memory Framework emphasize that writing performance

is not merely the outcome of linguistic mastery but also of cognitive load management, attentional control, working memory capacity, and the writer's ability to effectively regulate their thought processes. Despite the abundance of theoretical frameworks, however, empirical studies examining the specific cognitive factors that influence students' writing especially in EFL or multilingual contexts remain limited. Many studies focus primarily on linguistic features or writing products rather than the cognitive mechanisms underlying students' writing behaviors. This creates an important research gap that needs to be addressed.

The present study seeks to fill this gap by examining the influence factors that shape students' cognitive processes in writing. Specifically, the research focuses on identifying how components such as working memory, attention management, prior knowledge activation, metacognitive awareness, and emotional-cognitive factors (such as writing anxiety) contribute to the way students plan, draft, and revise their written texts. These factors are critical because they directly impact not only the quality of the writing product but also the efficiency of the writing process itself. By understanding these determinants, educators can design instructional strategies that align with students' cognitive needs and provide scaffolding that enhances their overall writing performance.

The importance of studying cognitive processes in student writing lies in its potential to transform writing pedagogy. Traditional writing instruction tends to emphasize final output, focusing largely on grammar, vocabulary, and text organization. While these elements are undeniably important, they often fail to address the invisible mental operations that students engage in while composing text. Without acknowledging the cognitive constraints students face such as limited working memory capacity or difficulty sustaining attention writing instruction risks being mismatched with learners' needs. Consequently, students may continue to struggle despite repeated exposure to writing exercises.

Moreover, examining cognitive influence factors has practical implications for developing interventions and instructional strategies. For instance, if working memory is identified as a dominant factor affecting writing fluency, teachers may incorporate activities that reduce cognitive load, such as guided planning, chunking techniques, or scaffolded sentence starters. If metacognitive awareness is shown to play a key role, instruction can emphasize self-monitoring strategies, reflective writing, and goal-setting practices. Understanding attention management issues, on the other hand, may lead educators to structure writing tasks in shorter segments or encourage the use of tools that promote focus (Cicekci & Sadik, 2019). Thus, insight into cognitive processes is not merely theoretical but directly informs classroom practice.

This topic is also significant because writing competence has become increasingly essential in academic, professional, and digital contexts. Students are expected to articulate ideas clearly, construct logical arguments, and engage in reflective thinking abilities that are deeply tied to cognitive functioning. In higher education, writing is a primary mode of assessment and a crucial medium through which students demonstrate understanding and produce knowledge (Huseynova, 2024). Therefore, identifying the cognitive factors that influence student writing can contribute to enhancing academic success more broadly.

Additionally, from a research standpoint, investigating cognitive influence factors supports the integration of interdisciplinary approaches in writing studies. The intersection between cognitive psychology and applied linguistics offers a richer, more comprehensive understanding of writing as both a mental and linguistic act. Such an approach encourages researchers to move beyond surface-level text analysis toward exploring the cognitive pathways that lead to the production of written discourse. This is aligned with contemporary movements in writing research that prioritize process-oriented perspectives rather than solely product-oriented evaluations.

Finally, the current study is important because it acknowledges individual differences among students. Cognitive processes are not uniform; students vary in how they perceive, process, and generate written information. Some excel in idea generation but struggle with organization. Others may have strong linguistic knowledge yet face difficulty maintaining focus. Still others experience high writing anxiety, which interferes with cognitive processing. By identifying and analyzing these differences, the study allows for more personalized and differentiated writing instruction—an approach increasingly recognized as essential in modern pedagogy.

This research focuses on the cognitive factors that influence students' writing processes, including working memory, attention control, metacognition, prior knowledge, and emotional-cognitive variables. The study is important because it addresses an underexplored area in writing research, supports the development of cognitively informed instructional practices, contributes to interdisciplinary scholarship, and promotes more effective and individualized writing pedagogy. A deeper understanding of how cognitive processes shape writing behaviors will not only enhance students' writing performance but also equip educators with the knowledge needed to create supportive and cognitively responsive learning environments.

2. RESEARCH METHOD

This study employed a qualitative phenomenological research design to explore and interpret the lived experiences of students as they engage in cognitive processes during writing. A phenomenological approach was chosen because the central aim of the study is to understand how students mentally experience and navigate the writing process including how they manage attention, retrieve ideas, regulate working memory, make decisions, monitor their performance, and respond emotionally while composing text. Cognitive processes are internal, subjective, and deeply personal; therefore, phenomenology provides the most appropriate lens to uncover the essence of these mental experiences (Flower & Hayes, 1981).

Rather than focusing on observable behaviors alone, phenomenology emphasizes the exploration of meaning and perception as experienced by participants. This design enables the researcher to capture the depth, richness, and complexity of students' cognitive engagement, which cannot be fully explained using descriptive or surface-level qualitative approaches. Through this method, the study seeks to reveal patterns of thought and mental effort that shape the writing process from the perspective of the learners themselves.

2.1. Participants

Participants were selected using purposive sampling, as the goal was to involve individuals who have direct and relevant experience with academic writing tasks requiring substantial cognitive engagement. The participants consisted of 15 EFL university students enrolled in an academic writing course. These students were chosen because they frequently engage in extended writing exercises that involve planning, organizing arguments, retrieving linguistic knowledge, and revising text activities aligned with complex cognitive processing.

The number of participants aligns with typical phenomenological studies, which prioritize depth of understanding over large sample sizes. All participants provided informed consent, and ethical considerations such as anonymity, confidentiality, and voluntary participation were upheld.

2.2. Data Collection

The data collection began with classroom observations during writing activities. These observations provided contextual insight and allowed the researcher to identify potential participants whose behaviors appeared cognitively meaningful.

Following observations, the researcher conducted in-depth semi-structured interviews. Each interview lasted 30–45 minutes and was audio-recorded with permission. The questions encouraged participants to recall specific experiences and describe the mental processes they

used during writing. Next, reflective writing logs were collected after selected writing tasks. Students wrote freely about their cognitive challenges and strategies, creating supplementary data to enrich the understanding of their lived experiences. All data were gathered over a period of 3 weeks to ensure depth and consistency.

2.3. Data Analysis

The data in this study were analyzed using Interpretative Phenomenological Analysis (IPA), an approach well-suited for capturing the depth of students' lived cognitive experiences during the writing process. IPA allows the researcher not only to identify recurring patterns in participants' accounts but also to interpret the underlying meanings embedded in their descriptions of cognitive activities such as planning, attention management, memory use, and emotional responses. Through this method, the analysis moved beyond surface-level descriptions and sought to uncover the internal mechanisms and subjective interpretations that students attach to their writing cognition.

The analysis began with a thorough engagement with the data. The researcher repeatedly read and re-read the interview transcripts, observation notes, and reflective writing logs to develop an overall sense of each participant's experience. This immersive reading served as a foundation for understanding the nuances of students' cognitive actions and emotional reactions as they engaged with writing tasks.

Following this initial immersion, the researcher carried out a detailed exploratory coding process. During this stage, meaningful expressions and references related to cognitive activity such as moments of planning difficulty, instances of working memory overload, shifts in attention, expressions of anxiety, and episodes of self-monitoring were identified and documented. These early codes reflected the complexity and variation of students' internal writing experiences and were essential for capturing the subtle cognitive challenges they encountered.

As the coding progressed, these initial insights gradually evolved into broader themes. Codes that shared conceptual similarities were clustered into larger cognitive categories. For instance, descriptions of mental fatigue, forgetfulness, and difficulty maintaining focus were collectively interpreted as indicators of "mental overload," whereas accounts that emphasized deliberate outlining, organizing ideas, and evaluating writing goals were grouped under "strategic planning." Similarly, patterns of rereading, revising, and correcting errors formed the basis for the theme of "monitoring and revising," while reflections on worry, pressure, or

frustration were understood as "emotional-cognitive barriers." These themes represented the major cognitive obstacles and strategies that shaped students' writing processes.

After identifying the emergent themes within individual cases, the researcher examined how these themes resonated across all participants. This cross-case analysis allowed the researcher to detect shared patterns of cognitive experience as well as meaningful variations among students. The process enabled the development of a comprehensive thematic structure that encapsulated the essence of how learners experience and interpret the cognitive demands of writing. The resulting thematic framework represents an integrated interpretation of the students' cognitive landscapes, highlighting not only what they experience but also how they make sense of these experiences.

To ensure the trustworthiness of the findings, several procedures were employed throughout the research process. The researcher conducted member checking by sharing preliminary interpretations with participants to verify whether the analyses accurately reflected their experiences. This step helped strengthen the credibility of the findings by ensuring alignment between the researcher's interpretations and the participants' intended meanings. Triangulation was also carried out by comparing insights from interviews, observations, and reflective logs, which allowed the researcher to corroborate and deepen the understanding of students' cognitive processes from multiple data sources. Furthermore, the final report was presented using rich and thick descriptions, which provided detailed portrayals of students' thought processes, struggles, and strategies. This approach ensured that the complexity of their cognitive experiences was fully captured and conveyed. Through these measures, the study maintained a high level of rigor and trustworthiness, reinforcing the validity of its phenomenological interpretation of students' writing cognition.

3. FINDING AND DISCUSSION

The analysis of interviews, reflective logs, and observational data revealed that students' cognitive processes in writing were shaped by a dynamic interaction between internal mental capacities and external situational factors. One of the most dominant findings concerned the experience of mental overload, which emerged as a central cognitive barrier for nearly all participants. Students consistently described difficulties in holding multiple ideas simultaneously while attempting to structure them into coherent written form. During the writing tasks, several participants paused for extended periods, indicating strain in managing the cognitive demands of planning, retrieving vocabulary, and constructing sentences at the same time. Their reflective logs also frequently referenced feelings of being "stuck,"

"forgetting ideas," or "losing track." This struggle reflected limitations in working memory capacity, which hindered their ability to sustain idea flow and affected the overall coherence of their writing.

Another prominent theme identified through IPA was the variability in students' strategic planning behaviors. While some learners demonstrated deliberate efforts to outline their ideas before writing, others engaged in writing with minimal planning, leading to fragmented thought patterns and greater cognitive strain during drafting. Interviews revealed that students who employed pre-writing strategies, such as outlining or mentally organizing key points, reported less cognitive stress and clearer focus throughout the writing process. In contrast, those who skipped planning described experiencing confusion, repetitiveness, and difficulty maintaining logical flow. Observational data supported this divergence: students with stronger planning tendencies spent more time at the beginning of the task but wrote more steadily afterward, whereas spontaneous writers frequently paused, reread, and restructured sentences midway. These findings indicate that planning not only facilitates organizational clarity but also reduces cognitive load, allowing students to allocate mental resources more efficiently.

The study further uncovered significant variations in attention management during writing. Many participants described their attention as unstable, easily disrupted by irrelevant thoughts, external distractions, or anxiety about grammar and correctness. This attentional drift often caused interruptions in idea development, leading to inconsistent pacing and frequent revising of previously written sections. During observations, several students repeatedly shifted between writing and checking instructions or rereading earlier sentences, suggesting difficulty maintaining sustained cognitive engagement. Interviews illuminated that this fluctuation in attention was often triggered by uncertainty or fear of making errors, indicating a strong link between emotional states and cognitive performance. Participants with better attentional control, however, reported smoother writing flow and fewer disruptions, highlighting attention management as a critical cognitive factor in effective writing.

A final theme that emerged prominently was the influence of emotional-cognitive barriers, particularly writing anxiety. Many students expressed feelings of pressure, self-doubt, and fear of producing "incorrect" writing, which significantly affected their cognitive processes. This anxiety often manifested as hesitations, excessive self-monitoring, and overthinking, all of which consumed cognitive resources that could otherwise support idea generation and connection-building. IPA analysis showed that anxiety not only intensified cognitive load but also shaped how students interpreted their writing abilities, sometimes causing them to underestimate their competence. Reflective logs frequently referenced

emotions such as frustration or nervousness, especially during complex tasks requiring argumentation or critical thinking. These emotional states limited their cognitive efficiency, demonstrating that affective factors are deeply intertwined with the cognitive processes of planning, generating, and revising text.

3.1. Cognitive Load and Working Memory Limitations in the Writing Process

The findings demonstrate that mental overload is one of the strongest influences on students' cognitive processes in writing, reinforcing theories that highlight the central role of working memory in composing text. Writing is a cognitively demanding activity that requires simultaneous engagement in idea generation, linguistic formulation, organization, and monitoring (Li, 2023). The students in this study struggled to manage these parallel demands, which is consistent with Kellogg's (1996) cognitive model asserting that writers often experience bottlenecks when working memory resources are insufficient. Participants frequently expressed difficulty sustaining their ideas, losing track of thoughts, or becoming overwhelmed when attempting to construct sentences while holding broader argument structures in mind. This aligns with findings from previous cognitive-writing research showing that limited working memory capacity impairs coherence and idea continuity.

The IPA analysis reveals that working memory constraints were not merely mechanical difficulties but were experienced by students as moments of confusion, stagnation, or cognitive fatigue. These subjective experiences give valuable insight into how cognitive strain manifests during writing. For example, prolonged pauses and repetitive rereading observed during writing tasks indicate that students often attempted to "reset" their cognitive state when overloaded. This suggests that cognitive load is not only a barrier but also a determining factor influencing students' choice of writing strategies. The findings support the argument that enhancing students' planning and chunking strategies can help distribute cognitive load more effectively. Thus, understanding working memory as a lived cognitive experience adds depth to traditional quantitative interpretations of writing difficulty.

3.2. The Role of Planning and Strategic Behaviors in Reducing Cognitive Strain

Another major insight from the findings is the influence of planning behaviors on cognitive efficiency during writing. Students who engaged in pre-writing activities such as outlining, organizing arguments, or determining key points reported feeling more mentally prepared and less overwhelmed. This observation is strongly supported by process-writing theories, which emphasize planning as a crucial stage that facilitates smoother execution and reduces the burden on real-time cognitive processing. The phenomenological data shed light

on how planning functions not merely as a procedural step but as a mental strategy that helps writers regulate their cognitive load.

The differences between planners and spontaneous writers highlight the importance of teaching explicit planning strategies in writing instruction. Students with well-developed planning habits appeared to experience writing as a more linear and manageable cognitive process (Batubara & Fithriani, 2023). Conversely, those who skipped planning encountered fragmented thinking, frequent interruptions, and heightened cognitive stress. The findings suggest that planning acts as a cognitive scaffold, helping writers allocate mental resources more efficiently and maintain textual coherence. From the perspective of cognitive psychology, planning reduces the working memory burden by externalizing structure before drafting begins. The phenomenological accounts from participants reinforce this theoretical view, revealing how planning alleviates internal pressure and leads to more stable cognitive engagement.

These findings underscore the pedagogical necessity of integrating structured planning exercises in writing curricula, particularly for EFL learners who face additional cognitive demands related to linguistic processing. Teaching students how to externalize their ideas before writing through mind maps, outlines, or guided prompts can significantly reduce the cognitive turbulence observed in this study. Hence, planning should not be seen as an optional step but as a fundamental strategy for improving cognitive fluency in writing.

3.3. Interplay Between Attention Management, Anxiety, and Cognitive Performance

The study also highlights the complex relationship between attention control, emotional states, and cognitive performance in writing. Students' experiences of attention drift, hesitation, and repeated checking reveal that sustained focus is often disrupted by internal concerns such as fear of making mistakes or uncertainty about grammatical accuracy. These findings align with theories of attentional interference, suggesting that anxiety and self-monitoring compete with cognitive resources needed for generating and organizing ideas. From a phenomenological standpoint, the students' narratives illustrate that attention is not simply a cognitive function but a fragile state influenced by emotional conditions.

Participants frequently described anxiety as a source of mental distraction that redirected their cognitive energy away from composing ideas and toward concerns about correctness. This pattern echoes the cognitive interference model, in which anxiety consumes working memory resources and weakens task performance (Toba et al., 2019). The IPA analysis reveals how deeply emotional-cognitive barriers shape the writing experience. When students feel pressured or insecure, they tend to over-monitor their writing, constantly revisiting previous

sentences and hesitating to move forward. This recursive behavior increases cognitive load and disrupts the natural flow of writing.

These findings suggest that addressing emotional factors is essential for improving cognitive performance in writing. Interventions that reduce anxiety such as low-stakes writing practice, supportive feedback, or metacognitive awareness training could help students maintain cognitive focus and reduce unnecessary self-monitoring. Importantly, the interaction between attention and anxiety reflects the inherently interconnected nature of cognitive and affective domains. For writing instructors, this emphasizes the importance of creating environments that promote psychological safety and allow students to engage with writing cognitively rather than defensively.

4. CONCLUSION

This study explored the underlying factors that shape students' cognitive processes in writing, highlighting how planning, working memory, attention regulation, and emotional-cognitive experiences interact to form a complex cognitive ecosystem. Through an Interpretative Phenomenological Analysis (IPA), the research illuminated the internal struggles, adaptive strategies, and meaning-making processes that students engage in while navigating writing tasks. The findings demonstrate that writing is not merely a linguistic activity but a deeply cognitive and affective experience influenced by mental load, attentional shifts, self-monitoring practices, and emotional responses such as anxiety or self-doubt.The study concludes that students' cognitive challenges are often rooted in overlapping factors rather than isolated difficulties, suggesting that interventions must address cognition holistically. Instructional approaches should therefore integrate scaffolded planning, memory support, reflective practice, and affective regulation. Teachers play a critical role in creating writing environments that reduce cognitive overload, guide students toward strategic thinking, and cultivate positive emotional engagement.Ultimately, this research underscores the importance of acknowledging students' internal experiences when teaching writing. By understanding how learners interpret, manage, and make sense of their cognitive processes, educators can design more responsive pedagogical strategies that not only improve writing performance but also empower students as confident and self-aware writers. The study contributes to the growing body of literature that positions writing as a complex cognitive activity shaped by cognitive, emotional, and contextual factors.

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