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EXPLORING COGNITIVE ENGAGEMENT IN EFL DESCRIPTIVE WRITING: A CASE STUDY USING MINDOMO-ASSISTED MIND MAPPING

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Abstract

This research aims to explore the process of teaching and students' cognitive engagement in writing descriptive texts using the mind mapping technique with the Mindomo application. This research used a qualitative approach. This research was conducted in one of the public junior high schools in Karawang. The participants were nine seventh-grade students selected from one class to represent low, medium, and high levels of cognitive engagement during the descriptive writing process. Data were collected through classroom observation, interviews, and documentation. The data were analyzed by using thematic analysis. The findings indicate that the implementation of mind mapping contributed to different manifestations of students' cognitive engagement during the writing process. Students demonstrated task management and strategic planning through visual organization of ideas, engaged in self-monitoring and revision while developing their texts from mind maps, and showed continued engagement through peer feedback and help-seeking behaviors. Students' emotional responses were identified as contextual factors that supported persistence during the writing process. Future research could involve more participants or different text types to extend these findings.

Keywords: *Mind Mapping, Mindomo, Cognitive Engagement, Descriptive Writing, Teaching Process.*

INTRODUCTION

Writing is an important skill in education because it allows students to express their ideas, feelings, and thoughts clearly. The four main language skills are listening, speaking, reading, and writing. Putri and Aminatun (2021) state that writing plays a key role in helping students organize ideas and develop critical thinking. It also improves communication and supports better understanding of the material. When students master writing, they are able to express their thoughts more effectively, which helps improve their learning and academic achievement.

In the context of learning English, writing is a productive skill that requires deep understanding and consistent practice. However, many students find writing in English to be boring and difficult. Phramphun and Tangkiengsirisin (2023) state that it is often considered more challenging than other language skills because it demands attention to various aspects such as grammar, vocabulary, and punctuation. As a result, students may struggle to enjoy the writing process and face difficulties in producing quality texts. These challenges can reduce their motivation and hinder the development of their writing skills.

English learning involves various text types to help students improve their writing. Putra et al. (2023) explain that in junior high school, the main types include descriptive, procedure, narrative, recount, and report texts. Descriptive texts are seen as the simplest

because they cover familiar topics like people, animals, and places, making them easier to understand (Purnamasari et al., 2021). They also help students build clear sentences, making descriptive texts a strong starting point for learning to write.

However, based on the preliminary observation at a junior high school in Karawang showed that students face several challenges in writing descriptive texts. Many struggle to stay focused, generate ideas, and organize them into clear, structured writing. They also lack confidence, which limits their critical thinking. Widyastuti et al. (2021) found that students are often confused when expressing their thoughts. Similarly, Farizka et al. (2020) reported that many students had difficulty developing ideas and were less active in writing classes.

These problems suggest a lack of meaningful student engagement in the writing process. Engagement includes behavioral, emotional, and cognitive aspects, each with a unique role. Behavioral engagement shows effort, emotional engagement relates to interest and motivation, while cognitive engagement involves strategy use and deep thinking (Fredricks et al., 2004). In writing, cognitive engagement is key, helping students plan, organize, and revise. However, many writing instructions still overlook these aspects by focusing more on outcomes than the learning process.

In response to these problems, it is important to apply suitable learning techniques to support students in writing. The researchers plan to use mind mapping technique supported by Mindomo application. Pitri (2022) explains that mind mapping is a visual method that shows the connection between ideas using words, images, and arrows. Mindomo helps visualize ideas through main topics and subtopics. It also offers features like images, links, and design options (Mayusandra, 2023), making it useful for improving idea organization and writing engagement.

Several studies have explored the use of mind mapping in improving students' writing skills. Sulastri and Purnamaningsih (2022) found that mind mapping helps students develop and organize ideas, though challenges remain in grammar, vocabulary, and mechanics. Mayusandra (2024) applied mind mapping using Mindomo application and reported a significant improvement, with an average post-test score of 78.15, showing the effectiveness of technology integration. Similarly, Novianti and Kareviati (2021) found that over 80 percent of students gave positive feedback, especially regarding increased focus and motivation.

Although previous studies have contributed to improving students' writing skills, the teaching process and students' cognitive engagement in writing still receive limited attention, particularly in addressing specific cognitive challenges faced by students. Many students experience difficulties in organizing ideas, planning content, and monitoring their writing during the writing process. Cognitive engagement is essential because it involves students' mental effort, strategic use of learning strategies, and deep processing of information. Therefore, this study investigates students' cognitive engagement in writing descriptive texts through the use of a mind mapping technique

with Mindomo application. Mindomo functions as a digital tool that supports visual organization, structured planning, and idea development, helping students address cognitive difficulties such as lack of organization and limited idea elaboration. The novelty of this research lies in its focus on how Mindomo application facilitates students' cognitive engagement during the writing process.

METHODOLOGY

This research employed a qualitative approach with a case study method to explore and understand students' cognitive engagement in writing descriptive texts through the use of mind mapping assisted by Mindomo application. This approach was considered appropriate as it allowed the researcher to investigate learning processes in depth within natural classroom settings by using flexible questions and procedures, inductive data analysis, and the researcher's interpretation of the data (Creswell, 2009). The case study method enabled a detailed exploration of the teaching and learning process, particularly classroom activities and students' cognitive engagement during descriptive writing, as the study was bounded by specific activities and conducted over a sustained period of time (Creswell, 2009).

The study was conducted in a seventh-grade class at a public junior high school in Karawang. From this class, nine students were selected to represent low, medium, and high levels of cognitive engagement observed during the descriptive writing process. The research was carried out over four classroom meetings. The first meeting focused on introducing descriptive texts and the concept of mind mapping. The second meeting involved the implementation of mind mapping using Mindomo application to support students in organizing ideas visually. In the third meeting, students wrote a descriptive text based on their completed mind maps. The fourth meeting emphasized editing, sharing, and reflection to allow students to review and revise their written work.

FINDINGS AND DISCUSSION

Teaching Process of Descriptive Text through Mind Mapping with Mindomo

1) Pre-writing

In the initial stage, the teacher built a positive atmosphere by greeting students, leading a prayer, and checking attendance. A brief review of the previous lesson helped activate prior knowledge and prepared students for the new topic, which was writing descriptive texts using the mind mapping technique. This approach aligns with Chew and Cerbin (2021), who emphasize the importance of review in reducing cognitive load. The teacher also asked thought-provoking questions to stimulate ideas, encouraging active participation. As noted by Schumacher and Stern (2023), such strategies promote engagement and readiness for deeper learning tasks.

2) Whilst-writing

In the whilst stage, the teacher introduced the concept of descriptive text by giving an example of how to describe a person. This example helped students understand the main features of descriptive writing. Some students asked questions to clarify their understanding, showing interest in the topic. The teacher then explained the steps for creating a mind map and highlighted how it helps organize ideas in a visual and structured way. Students took notes actively throughout the explanation. After that, the teacher demonstrated how to use Mindomo app by showing how to create a main idea and connect related branches. This kind of guided instruction is supported by the research from by Shi et al. (2023), who found that clear modeling helps engage students cognitively by making complex tasks easier to understand.

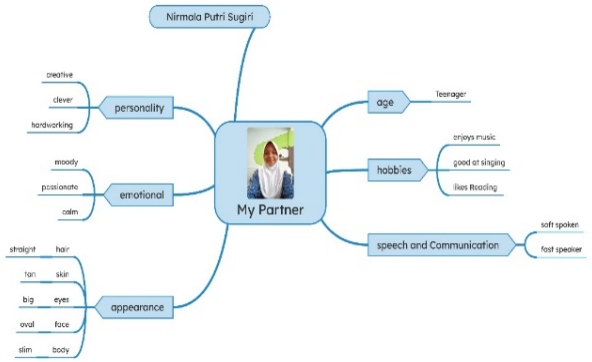
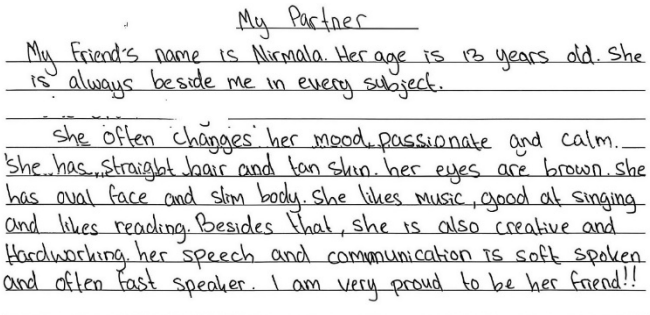


Figure 1. **Student's Mind Map**

After the demonstration, students brainstormed ideas and created digital mind maps using Mindomo. Guided by the teacher, they identified classmates' characteristics and organized ideas under branches like Appearance, Personality, and Hobbies. Some students experienced minor technical issues, but the activity went successfully. They added visuals and colors to enhance their maps, showing enthusiasm and creativity. This constructive activity reflects cognitive engagement, as students actively built knowledge. This is supported by the research from Sari et al. (2023), who found that digital mind mapping promotes deeper thinking and interactive learning in writing activities.



My Partner

My friend's name is Nirmala. Her age is 13 years old. She is always beside me in every subject.

She often changes her mood. passionate and calm. She has straight hair and tan skin. her eyes are brown. She has oval face and slim body. She likes music, good at singing and likes reading. Besides that, she is also creative and hardworking. her speech and communication is soft spoken and often fast speaker. I am very proud to be her friend!!

Figure 2. Student's descriptive text

After completing their mind maps, students began writing descriptive paragraphs using the ideas they had organized. Many students wrote confidently, while others received guidance from the teacher to form clear sentences. The teacher walked around to monitor progress and provide support. Once drafts were finished, students exchanged their work for peer feedback, promoting reflection and improvement. Many students also presented their writing aloud. This process is supported by the research from Kumar et al. (2024), who found that feedback and creative expression enhance focus, understanding, and active participation in learning.

3) Post-writing

In the final stage, the teacher guided reflection and closed the session by summarizing key points, emphasizing how mind mapping supports idea organization. Students were invited to share their experiences, providing insights about their own ideas and learning processes. Some responses were detailed, while others were brief, indicating a need for further reflection practice. The teacher concluded with encouraging feedback, creating a supportive atmosphere that promotes motivation and participation. This reflective activity is supported by Suraworachet et al. (2023), who found that structured reflection combined with feedback enhances students' engagement and performance in reflective tasks.

The findings indicate that teaching descriptive writing using mind mapping with Mindomo was carried out in clear stages, including prewriting, whilst writing, and postwriting. Students organized their ideas visually and expressed them in writing. They actively participated, asked questions, shared ideas, and took part in peer feedback and reflection. Although some technical problems occurred, students adapted well. Overall, the teaching process followed the plan, and the use of mind mapping supported student engagement and meaningful interaction throughout the learning process.

Students' Cognitive Engagement

The study showed that students managed their writing tasks through structured planning and strategic organization. Most students explained that they started by building their mind maps as a foundation before writing. R8 said, "*I create the mind map first and finish each topic one by one*." R9 shared, "*I divide my time by filling in the mind map boxes first, then continue with the next topic*." Meanwhile, R2 stated, "*I usually do some rough drafts first. After I'm sure of the content, I create the mind map in Mindomo*."

These approaches were supported by observations and worksheet data. Students such as R1, R2, and R3 consistently showed strategic planning and self-regulation during the writing process. Their worksheet results also displayed organized ideas and logical structure, in line with their interview responses. These findings reflect cognitive engagement, where students planned their work with intention and structure. This

supports Connell and Wellborn's (1991) view of learning as an intentional process and Heilporn et al.'s (2021) emphasis on the use of strategies in active learning.

Another important aspect observed was students' ability to revise and monitor their writing as part of their cognitive engagement. Many students expressed awareness of their writing quality and described revising their work before submitting it. R1 mentioned, "*I usually revise it first if there are mistakes or typos*." R6 said, "*I look over it, and if something is wrong, I fix it*." Likewise, R4 added, "*I check it for mistakes, correct them*." These habits indicate self-monitoring and critical thinking in the writing process.

Observation checklists and worksheet analysis supported this, especially for students like R1 and R4 who showed clear revisions and improvement in their written work. Their drafts reflected changes in structure, grammar, and clarity, suggesting that they were actively evaluating and refining their output. These findings align with previous research (Zhang & Hyland, 2022; Hew et al., 2016), which explained that cognitively engaged learners improve their work through monitoring and reflective action. Huang et al. (2019) also noted that the quality of student work often reflects the depth of their cognitive engagement.

Finally, this study found that students engaged cognitively by seeking help and using available resources when facing difficulties. Many students did not stay passive when unsure of what to write or how to use the application. R6 and R7 said, "*I ask my friend for help*." R4 explained, "*I find sources by asking my teacher or classmates*." R5 shared, "*I ask my teacher or the classmate sitting next to me*," while R1 stated, "*When I run out of ideas, I usually look for references from books or the internet*." These responses show that students were aware of their learning needs and took action to address them.

Observation checklists confirmed that students like R1, R4, and R5 interacted with peers and teachers to clarify ideas, and their worksheet results improved afterward. These behaviors reflect metacognitive awareness, as noted by Jin et al. (2022), where students actively monitored their challenges and sought appropriate support. This pattern also aligns with Weinstein and Mayer's (1986) concept of resource management as a cognitive learning strategy. Furthermore, it demonstrates the importance of social interaction in learning, emphasizing how assistance from others can help students overcome difficulties and enhance their understanding.

Contextual Emotional Responses During the Writing Process

In addition to cognitive engagement, students' emotional responses were observed as contextual factors during the writing process. Positive emotions such as enjoyment and interest were expressed by several students and appeared to support their persistence during writing activities. R1 said, "*Yes, I enjoy it because I like writing,*"

while R2 stated, "*Yes, I like it because it makes me more excited and interested*." R3 added, "*Yes, because I feel excited and motivated when doing it*."

On the other hand, some students expressed negative emotional reactions toward the writing task. R7 explained, "*No, because it makes me feel dizzy*." R4 stated, "*No, I prefer standard tasks because I don't want to stress out*," and R9 said, "*No, I don't like it because challenging tasks are difficult, confusing, and stressful*." Despite these reactions, these students still completed their writing tasks. This suggests that emotional regulation influenced how students experienced challenges during the writing process, rather than serving as a primary focus of cognitive engagement. This finding is consistent with Maharani et al. (2023), who noted that managing emotions can help students remain involved when facing learning difficulties.

CONCLUSION

This study aimed to explore how descriptive writing was taught using mind mapping technique supported by Mindomo application, and how students were cognitively engaged throughout the process. Based on the data presented earlier, the teaching was delivered in a well-organized manner that supported student participation. The findings revealed four key indicators of cognitive engagement, which were identified through interview responses, classroom observations, and student work. These findings indicate that students were actively and mentally engaged in the learning process.

In terms of the teaching process, using mind mapping technique with the help of Mindomo application allowed the teacher to present the lesson more clearly and meaningfully. The lesson was carried out in three stages: pre-writing, writing, and reflection. In the early stage, the teacher activated students' prior knowledge by asking questions and giving examples. During the main activity, students created mind maps and developed their writing with guidance. Reflection activities helped them share their learning and appreciate each other's work.

Related to students' cognitive engagement, this study identified three main findings related to students' cognitive engagement and one additional contextual finding related to students' emotional responses during the writing process. First, they showed clear task management and planning by preparing ideas and organizing content using Mindomo. Second, they revised their writing by checking for mistakes and improving their drafts, showing self-monitoring. Third, they asked for help from friends and teachers, and used resources like examples and feedback to improve their work. In addition, one contextual finding revealed that students' emotional responses influenced how they experienced and sustained their engagement during the writing process.

In conclusion, using the mind mapping technique through the Mindomo application brought positive results for both teaching and student engagement in writing descriptive texts. Students were guided to plan, structure, and reflect on their writing clearly. They

became more active and confident in expressing ideas. This study highlights the benefits of combining visual strategies with digital tools to support learning. Teachers are encouraged to apply similar methods to improve classroom participation and writing outcomes.

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