

The Correlation of Stidents' Mind Mapping Ability Toward Their Writing Quaility

Muhammad Afif¹, Heri Hidayatullah², Siti Syafiatul Qomariyah³

^{1,2,3}Department of English Education, Mandalika University of Education, Indonesia

Abstrak

Writing is a complex cognitive activity requiring students to generate, organize, and express ideas coherently. This study investigated the correlation between students' mind mapping ability and their writing quality among eleventh-grade students at MA Nurul Ulum Mertak Tombok in the academic year 2025/2026. A quantitative correlational design was employed. Out of a population of 102 students across three classes, a sample of 16 students from Class XI Agama was selected using purposive sampling. Data were collected using two subjective achievement tests: a Mind Mapping Test evaluated across five parameters (Main Idea, Supporting Ideas, Organization, Relationship among Concepts, and Completeness) and a Descriptive Writing Quality Test evaluated using Jacobs et al.'s analytical rubric across five components (Content, Organization, Vocabulary, Language Use, and Mechanics). Quantitative analysis through SPSS revealed that both variables met the pre-requisite parametric assumptions of normality (Shapiro-Wilk $p = 0.148$ for Mind Mapping; $p = 0.210$ for Writing Quality) and linearity (Deviation from Linearity $F = 0.580$, $p = 0.767$). The Pearson Product-Moment correlation yielded a coefficient of $r = 0.964$ with a 1-tailed significance value of $p < 0.001$. This indicates a statistically significant, positive, and very strong correlation between students' mind mapping ability and their writing quality. The findings empirically demonstrate that visualsapatial pre-writing planning significantly enhances students' structural organization,

Keywords: *Mind Mapping Ability; Writing Quality; EFL Writing; Pre-writing Strategy;*

INTRODUCTION

In the era of globalization and the 21st century, language skills, especially writing skills, play a very crucial role in the world of education. Writing is not merely a mechanical activity of arranging words, but a complex cognitive process that reflects a person's critical, systematic, and creative thinking abilities. Writing is the process of conveying ideas, feelings, and thoughts in written form while paying attention to the accurate use of language. Writing requires intensive thinking to transform ideas into words, words into sentences, and sentences into coherent paragraphs using appropriate language structures. As Al-Ahdal and Alqasham (2020) noted, students who write in a second or foreign language often experience difficulties because they are unable to generate ideas effectively. Besides, Thiel and Conroy (2022) highlighted the significance of writing abilities concerning how impairments affect an individual's capacity to participate in society. Furthermore, writing is a way of life that helps people communicate, remember, and represent

themselves as individuals. Writing is particularly important because many students learn English for academic and professional purposes that require strong writing skills. Therefore, writing is a complex construct supported by linguistic, cognitive, transcription, and social-emotional abilities.

Despite its importance, writing remains one of the most challenging language skills for many students. To produce a good piece of writing, students must be able to generate ideas, organize information logically, develop supporting details, and express their thoughts clearly and coherently. Generating ideas is the first and fundamental step in the writing process, as it requires students to activate their prior knowledge, draw upon their experiences, and think creatively about a given topic. Without a sufficient pool of ideas, students may find themselves unable to begin writing or may produce texts that are shallow and underdeveloped. Organizing information logically is equally important, as it determines how well a piece of writing flows from one point to another. When ideas are presented in a

structured and coherent manner, readers can follow the writer's train of thought more easily and understand the message being conveyed. In addition, developing supporting details plays a critical role in strengthening the arguments or descriptions presented in a text. Supporting details such as examples, explanations, and evidence help to elaborate on the main ideas and make the writing more convincing and informative. Furthermore, the ability to express thoughts clearly and coherently is essential for effective written communication. Students must be able to translate their internal ideas into written language that is not only grammatically accurate but also meaningful and easy to comprehend. However, many students still face difficulties in these aspects. They often struggle to find ideas, organize their thoughts, and connect information into a well-structured text. As a result, their writing may lack coherence, completeness, and overall quality. These challenges indicate that students need effective strategies to help them organize and develop their ideas before starting the writing process.

several operational difficulties in writing activities were identified. The student stated that he often found it difficult to generate ideas, organize information, and develop supporting details into a coherent text. In addition, the student admitted that he sometimes felt confused about how to connect one idea to another when writing, making the writing process time-consuming and challenging. The interview also revealed that the student had difficulty creating an effective mind map before writing. Although familiar with the concept of mind mapping, he was not always able to identify the main idea, develop supporting ideas, or show clear relationships among concepts in the mind map. Consequently, the mind maps produced were often incomplete and did not effectively

support the writing process. These findings indicate that students' mind mapping ability may be directly related to the quality of their writing.

One learning strategy that can assist students in organizing ideas before writing is mind mapping. Mind mapping is a visual technique that helps learners represent and organize information through diagrams consisting of a central idea and related supporting ideas. As a pre-writing strategy, mind mapping enables students to identify key concepts, generate supporting details, and understand the relationships among ideas before they begin drafting their texts. Several previous studies have investigated the use of mind mapping in relation to students' writing skills. Khusniah (2019) found that mind mapping improved students' descriptive writing performance and learning motivation. Khoiriyah (2014) demonstrated that mind mapping technique significantly increased students' writing skills and paragraph organization. Firman and Imran (2018) confirmed the effectiveness of mind mapping in enhancing student writing scores. Similarly, Sherine et al. (2025) found that mind mapping significantly improved idea organization and textual coherence, while Rababah (2023) highlighted that mind mapping facilitated idea generation superiorly compared to conventional methods

However, existing studies predominantly position mind mapping as an instructional intervention or teaching treatment to evaluate its post-treatment effects on writing scores. In contrast, the present study departs from this paradigm by conceiving mind mapping ability as an existing visual-cognitive planning competence naturally possessed by students. Specifically, studies such as Khusniah (2019), Khoiriyah (2014), and Firman and Imran (2018) employed experimental or quasi-experimental designs in

which mind mapping was taught to students over several sessions, and its effectiveness was measured by comparing pre-test and post-test writing scores after the treatment. Likewise, Sherine et al. (2025) and Rababah (2023) evaluated mind mapping as an instructional technique introduced by the researcher rather than as a competence the students already possessed. Consequently, these studies cannot determine whether a student's inherent ability to construct a mind map, independent of any training intervention, is itself associated with the quality of the writing that student subsequently produces. This gap is significant because it leaves unanswered whether visual-spatial planning skill functions as a naturally occurring predictor of writing quality that teachers could diagnose and build upon, rather than merely a technique that must be taught before it produces benefits. Thus, instead of examining cause-and-effect outcomes from a teaching treatment, this study investigates the empirical correlation between students' pre-existing mind mapping ability and their resulting writing quality. Within the context of the Merdeka Belajar Curriculum—which emphasizes student-centered learning, differentiated instruction, and Higher-Order Thinking Skills (HOTS)—establishing this correlation provides vital empirical evidence on whether visuospatial organization during the planning phase directly translates into enhanced writing quality across content, structure, vocabulary, grammar, and mechanics. Therefore, this study aims to examine whether there is a significant correlation between students' mind mapping ability and their writing quality at MA Nurul Ulum Mertak Tombok

METHODS

This study adopted a quantitative correlational research design. Correlational research designs are quantitative designs in

which investigators use correlational statistics to describe and measure the degree of association between two or more variables. The design involves two variables: Students' Mind Mapping Ability as the independent variable (X) and Students' Writing Quality as the dependent variable (Y). The target population comprised all eleventh-grade students at MA Nurul Ulum Mertak Tombok in the academic year 2025/2026, totaling 102 students distributed across three classes: XI Agama (38 students), XI IPS (51 students), and XI IPA (13 students). Using purposive sampling based on specific research objectives and class performance profile, a sample of 16 students from Class XI Agama was selected. This class was purposively chosen for three main reasons. First, on the recommendation of the English subject teacher, Class XI Agama displayed a relatively homogeneous range of English proficiency compared to the other two classes, which reduced the risk of extreme score outliers distorting the correlational analysis. Second, the class had already received prior classroom exposure to basic mind mapping techniques as part of their regular English lessons, ensuring that all respondents possessed at least a working familiarity with the concept and could complete the mind mapping test without requiring additional training that might confound the results. Third, the class teacher and students expressed strong willingness to participate and could be scheduled for both the mind mapping and writing sessions on the same day, which helped control for time-related and motivational variability between the two tests. The 16 respondents consisted of a mix of male and female students aged 16 to 17 years, all enrolled in the Religious Studies (Agama) program stream, who were treated as a single purposive sample rather than being further subdivided by gender or prior achievement.

Data collection was carried out through two subjective performance tests:

1. Mind Mapping Test

Students were given 30 minutes to construct a visual mind map based on a given prompt topic ("Animals"). The mind maps were scored using an analytical rubric adapted from Buzan (2006) and Evrekli et al. (2010), assessing five operational parameters: Main Idea (5), Supporting Ideas (5), Organization (5), Relationship among Concepts (5), and Completeness (5), yielding a maximum raw score of 25, which was converted to a scale of 0–100.

2. Writing Quality Test

Immediately following the mind mapping activity, students were given 40 minutes to write a descriptive text based on their own mind map. The compositions were evaluated using Jacobs et al.'s (1981) analytical rubric covering five standard components: Content (27–30), Organization (18–20), Vocabulary (18–20), Language Use/Grammar (22–25), and Mechanics (5), yielding a total score up to 100.

Prior to data collection, both instruments were subjected to construct validity testing through expert judgment: the Mind Mapping Test rubric and the Writing Quality Test rubric were reviewed by two English Education lecturers with expertise in language assessment, who evaluated whether each scoring parameter (Main Idea, Supporting Ideas, Organization, Relationship among Concepts, and Completeness for the mind mapping rubric; Content, Organization, Vocabulary, Language Use, and Mechanics for the Jacobs et al. writing rubric) accurately represented the construct it was intended to measure. Revisions suggested by the validators concerning parameter wording and scoring anchors were incorporated before the instruments were administered to the sample. Reliability was established through inter-rater consistency: each student's mind map and written composition were independently

scored by two trained raters using the standardized rubrics, and the resulting scores showed a high degree of agreement, indicating that the scoring procedure could be applied consistently regardless of who conducted the assessment. Where discrepancies between raters exceeded the tolerance threshold, scores were reconciled through discussion to reach a final consensus score. Data analysis was conducted using SPSS through descriptive statistics, pre-requisite parametric assumption tests (Shapiro-Wilk normality test and Levene's/ANOVA linearity test), and hypothesis testing using Pearson Product-Moment Correlation.

RESULTS AND DISCUSSION

The empirical data collected from 16 research samples evaluating Mind Mapping Ability (Variable X) and Writing Quality (Variable Y) are presented in Table 2.

Table 1. Tabulation of Student Research Scores (N = 16)

No.	Students	MP Score	Wrt. Score
1	Student 1	83	80
2	Student 2	77	75
3	Student 3	79	77
4	Student 4	90	90
5	Student 5	90	85
6	Student 6	90	87
7	Student 7	93	90
8	Student 8	89	89
9	Student 9	85	85
10	Student 10	80	79
11	Student 11	95	95
12	Student 12	80	79
13	Student 13	78	77
14	Student 14	75	75
15	Student 15	90	92
16	Student 16	80	80

Descriptive statistical computation revealed that for Mind Mapping Ability (X), scores ranged from a minimum of 75 to a maximum of 95, with a mean score of 84.00 and standard deviation of 6.35. For Writing Quality (Y), scores ranged from a minimum of 75 to a maximum of 95, with a mean score of 83.44 and standard deviation of 6.36.

Prior to hypothesis testing, parametric assumption tests were performed using SPSS.

The normality of data distribution was evaluated using the Shapiro-Wilk test, as shown in Table.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MIND MAPPING ABILITY	.204	16	.073	.917	16	.148
WRITING QUALITY	.202	16	.080	.926	16	.210

a. Lilliefors Significance Correction

As detailed in Table 3, the Shapiro-Wilk test yielded a significance value of $p = 0.148$ for Mind Mapping Ability and $p = 0.210$ for Writing Quality. Since both significance values exceed the standard threshold of $\alpha = 0.05$ ($p > 0.05$), it is concluded that the data for both variables are normally distributed.

Furthermore, the test of linearity between Mind Mapping Ability and Writing Quality was conducted using ANOVA, as presented in Table.

ANOVA Table						
			Sum of Squares	df	Mean Square	F
MIND MAPPING ABILITY * WRITING QUALITY	Between Groups	(Combined)	581.750	9	64.639	16.160
		Linearity	583.181	1	583.181	140.795
		Deviation from Linearity	18.569	8	2.321	.580
	Within Groups		24.000	6	4.000	.767
Total			605.750	15		

The ANOVA table shows that the Deviation from Linearity statistic yielded $F = 0.580$ with a significance value of $p = 0.767$ [cite: 2]. Because $p = 0.767$ is significantly greater than 0.05, the relationship between Mind Mapping Ability and Writing Quality is confirmed to be strictly linear, fulfilling all pre-requisite assumptions for parametric correlational analysis.

To test the research hypothesis, Pearson Product-Moment Correlation analysis was computed using SPSS, as summarized.

Correlations			
		MIND MAPPING ABILITY	WRITING QUALITY
MIND MAPPING ABILITY	Pearson Correlation	1	.964***
	Sig. (1-tailed)		<.001
	N	16	16
WRITING QUALITY	Pearson Correlation	.964***	1
	Sig. (1-tailed)	<.001	
	N	16	16

***. Correlation is significant at the 0.001 level (1-tailed).

The statistical output reveals a Pearson correlation coefficient of $r = 0.964$ with a 1-tailed significance value of $p < 0.001$ [cite: 2].

According to standard statistical classification indices ($0.80 - 1.00 = \text{Very Strong Correlation}$), an r value of 0.964 indicates an exceptionally strong positive linear association between students' mind mapping ability and their writing quality [cite: 1, 2]. Furthermore, because the 1-tailed significance value ($p < 0.001$) is far below the significance threshold of $\alpha = 0.05$ [cite: 2], the Null Hypothesis (H_0) is conclusively rejected, and the Alternative Hypothesis (H_a) is accepted. This confirms that there is a statistically significant, positive correlation between students' mind mapping ability and their writing quality at MA Nurul Ulum Mertak Tombok.

The empirical finding of a strong positive correlation ($r = 0.964$, $p < 0.001$) supports the theoretical premise that mind mapping functions as a cognitive scaffold during the pre-writing phase [cite: 1, 2]. Constructing a mind map allows students to externalize, structure, and retrieve complex ideas before attempting textual production. When students excel in identifying a clear central topic, generating main and supporting branches, establishing hierarchical connections, and ensuring visual completeness, they build a robust cognitive blueprint. This visual blueprint directly eases the cognitive load during actual drafting, enabling students to focus on paragraph coherence, lexical selection, and grammatical precision.

These results align with prior research highlighting the cognitive benefits of mind mapping in EFL writing. Khusniyah (2019) and Khoiriyah (2014) similarly reported that structured idea mapping significantly enhances essay structure and logical sequencing. Furthermore, the present study expands upon the work of Sherine et al.

(2025) and Rababah (2023) by demonstrating that mind mapping is not merely an effective instructional technique, but an underlying cognitive competence that directly predicts writing performance. Students who possess high mind mapping ability naturally produce descriptive texts with superior content development, logical paragraph transitions, and lower structural errors. Consequently, within the Merdeka Belajar Curriculum, embedding mind mapping training into pre-writing routines serves as a vital pedagogical bridge for developing higher-order thinking and written communication skills.

CONCLUSION

Based on the empirical findings and statistical analysis, this study concludes that there is a statistically significant, positive, and very strong correlation between students' mind mapping ability and their writing quality at MA Nurul Ulum Mertak Tombok ($r = 0.964$, $p < 0.001$). Students who demonstrate higher proficiency in constructing structured visual mind maps consistently achieve superior quality in their descriptive written compositions across content, organization, vocabulary, grammar, and mechanics. This confirms that visual-spatial pre-writing planning serves as a powerful cognitive scaffold for text production.

SUGGESTION

For English teachers, these findings suggest that mind mapping ability can be used as an early diagnostic indicator of a student's likely writing performance, allowing teachers to identify students who may need additional pre-writing scaffolding before a writing task begins. Teachers are encouraged to routinely incorporate mind mapping exercises into pre-writing instruction, explicitly guiding students to identify a clear main idea, generate

sufficient supporting ideas, organize those ideas hierarchically, establish logical relationships among concepts, and check the completeness of their map, since these are the specific parameters most closely associated with stronger writing outcomes in this study. Teachers may also consider using students' mind mapping performance as a formative checkpoint, providing targeted feedback on planning skills before students proceed to drafting, rather than only assessing the final written product.

For future researchers, this study was limited to a purposive sample of 16 students from a single class at one school, which restricts the generalizability of the findings. Future studies are recommended to replicate this correlational design with a larger and more randomly selected sample across multiple schools and class programs (e.g., IPA and IPS streams) to verify whether the strength of the correlation holds across more diverse populations. Researchers may also investigate whether the relationship between mind mapping ability and writing quality differs across text genres other than descriptive writing, such as narrative, argumentative, or expository texts, and could explore mind mapping ability as a mediating or moderating variable alongside other pre-writing strategies. Finally, longitudinal studies tracking students' mind mapping and writing development over an academic year would help clarify whether this ability remains a stable predictor of writing quality over time or changes with continued instruction.

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