

Using Mind Mapping to Improve Students' Reading Comprehension

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ABSTRACT

Reading comprehension plays a pivotal role in students' academic achievement. However, many learners struggle due to traditional teaching methods and limited strategies. To address this challenge, this research investigates whether the use of mind mapping can improve reading comprehension among eighth-grade students at SMP PT Pasangkayu. This research used a quasi-experimental design. The population consists of eighth-grade students from SMP PT Pasangkayu, totaling 85 students from 3 classes. The sample is class B as the experimental class and class C as the control class. Tests were used to collect data consisting of pre-tests and post-tests. The test results show that the average pre-test score obtained by the experimental class is 35.14, while the average pre-test score obtained by the control class is 43.72. Then the average post-test score of the experimental class was 79.64, while the control class was 53.93. The calculated t-value (3.37) was greater than the t-table value (1.674), which means the hypothesis is accepted. The t-test is used to test the significance and relevance between two unpaired sample groups. Based on the research results, the use of mind mapping can improve the reading comprehension of eighth-grade students at SMP PT Pasangkayu.

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1. Introduction

Reading comprehension is a crucial component of language learning, enabling students to derive meaning from texts and broaden their knowledge. It allows learners to engage with various types of written material, develop critical thinking skills, and apply information in real-life contexts. Without strong reading comprehension skills, students may struggle to grasp key concepts, follow instructions, or perform well academically (Aswad et al., 2019; Dalyan et al., 2023; Mahdori et al., 2025). Therefore, fostering reading comprehension is essential not only for academic success but also for lifelong learning and effective communication. However, many students face challenges in understanding reading materials, often due to monotonous teaching methods and limited vocabulary (Rahman & Widyastuti, 2023; Sachiya et al., 2025). This condition was observed among the eighth-grade students of SMP PT Pasangkayu, whose reading comprehension levels were notably low.

This research is based on the cognitive theory of learning, particularly Buzan's (2005) concept of mind mapping, which suggests that visualizing information helps improve comprehension. Previous studies have supported the effectiveness of this method. For instance, Cahyani et al., (2015) this research was conducted on seventh-grade students at SMP N 3 Colomadu. The focus is on addressing students' difficulties in understanding the main idea, implicit and explicit information, and word meanings in the text. Mind mapping has been proven to improve reading comprehension and create a more conducive classroom environment. The average score increased from 57.99 (pre-test), 68.29 (post-test 1), to 80.31 (post-test 2). Indrayani (2014) her research shows the effectiveness of mind mapping in improving the comprehension of narrative text reading among second-year students at Mathla'ul Huda High School, Parung Panjang, Bogor. The average post-test score of students in the experimental class (27.14) was much higher than that of the control class (17.71). The t-test results show that the t-value (3.47) is greater than the critical t-value (1.66), indicating a significant effect. Kusmaningrum (2016) the research was conducted on 4th-semester students at STAIN Curup. The results show a significant improvement in reading and writing comprehension after the use of the mind mapping technique. The difference also appeared significant between the experimental and control groups. Students gave positive responses to the use of this technique in learning. These findings provide a solid foundation for implementing mind mapping in this research.

To address these challenges, this research explores the use of mind mapping as an instructional technique. Mind mapping is a visual strategy that helps students organize information using diagrams, keywords, and images, making it easier to understand and retain textual content. Prior studies have shown the effectiveness of mind mapping in enhancing reading and writing skills by stimulating both analytical and creative thinking. It encourages learners to actively engage with the material by visualizing connections between ideas, which can lead to deeper comprehension. By integrating this technique into reading activities, teachers can create a more interactive and student-centered learning environment that supports diverse learning styles.

To tackle these problems, various instructional strategies have been proposed. One such strategy is mind mapping, which allows learners to visualize information and make meaningful connections. According to Budd (2004), mind mapping presents information in a graphic format, enabling students to create mental associations and improve comprehension. Nesbit & Adesope (2006) also argue that mind mapping helps diversify teaching methods, making it easier to reach students with different learning styles. This aligns well with the needs of the eighth-grade students at SMP PT Pasangkayu, who require more engaging and interactive learning techniques.

Mind mapping offers numerous practical benefits that make it an invaluable tool in the classroom, especially in the context of language learning and reading comprehension (Syukur & Tohamba, 2025; Amalia et al., 2022; Yaumi et al., 2023). As a visual representation technique, mind mapping helps students simplify complex information by breaking it down into manageable and interconnected parts. This method effectively engages both the analytical and creative hemispheres of the brain, promoting a holistic learning experience. By incorporating colors, images, keywords, and spatial arrangements, mind mapping enhances memory retention and supports the brain's natural preference for visual stimuli.

One of the most significant advantages of mind mapping is its ability to visually connect ideas, making it easier for students to organize and structure their thoughts. According to Stine (1997), this technique enables learners to identify main ideas, link related concepts, and recall information with greater efficiency. When applied in reading instruction, mind mapping allows students to extract essential points from a text and see the relationships between different pieces of information, thus fostering deeper comprehension (Ko et al., 2025; Suheri et al., 2025).

Given its potential, the researcher seeks to implement and investigate the effectiveness of mind mapping as a strategic tool to improve reading comprehension skills among students. The focus of this study is particularly directed toward enhancing students' literal understanding of short recount texts—texts that recount events or experiences in a structured manner. Literal comprehension, which involves grasping explicit information stated in the text, serves as the foundation for more advanced levels of understanding. By using mind mapping, students can more clearly identify key events, details, and sequences within recount texts, thereby improving their ability to comprehend and retain what they read. The research employed a quasi-experimental design involving two classes: one experimental group that received treatment used the mind mapping technique, and one control group that followed conventional reading instruction. Both groups were given pre-tests and post-tests to measure improvement. The data showed a significant increase in the reading comprehension scores of the experimental group compared to the control group.

The findings confirm that the implementation of mind mapping significantly improves students' reading comprehension. This research contributes to the field of English education by offering a practical, engaging, and student-centered strategy that teachers can adopt to enhance learning outcomes, particularly in reading. Moreover, it highlights the importance of incorporating innovative teaching techniques to address diverse learning needs and promote deeper understanding.

2. Methodology

This research adopted a quasi-experimental design involving two intact classes: Class VIII B (experimental group) and Class VIII C (control group). Both groups were given pre-tests and post-tests, but only the experimental group received the treatment used mind mapping over six meetings.

a) Population and Sample: The population comprised 85 eighth-grade students. Used purposive sampling, two classes were selected: 28 students in the experimental group and 29 in the control group. b) Instruments and Procedure: Data were collected through reading comprehension tests adapted from KTSP 2006 rubrics. The treatment included guided lessons on how to construct mind maps based on short recount texts. Control group students received conventional instruction. Data were analyzed used descriptive statistics and independent t-tests to determine significance.

c) Validity and Reliability: Test instruments were validated by supervisors and based on curriculum standards. Consistent administration of pre- and post-tests across groups ensured reliability. The t-test confirmed statistical significance, affirming the internal validity of the results.

3. Result and Discussion

This research used pre-test and post-test to measure the comparison and effectiveness of the strategies used. According to Creswell (2012), a pre-test is a measurement conducted before the treatment is given, to determine the initial abilities of the participants. while the Post-test is a measurement taken after the treatment is given, to see any changes or improvements in learning outcomes as a result of the treatment. Fraenkel and Wallen (2009) state that Pre-test and Post-test are used in quasi-experimental design to measure changes in learning outcomes. the comparison between Pre-test and Post-test results helps researchers determine the effectiveness of a strategy.

3.1 Pre-Test Results

The pre-test was administered before the treatment to measure the students' initial reading comprehension ability. The results showed that the average score of the experimental group was 35.14, with the lowest score being 0 and the highest 96. Meanwhile, the control group had an average score of 43.72, with scores ranging from 8 to 80. These findings indicate that prior to treatment, students in both groups had low reading comprehension skills (categorized as "failed"). This baseline data was essential to determine the effectiveness of the intervention. It also highlighted the urgent need for improved teaching strategies to address students' difficulties in understanding texts. The wide score range in both groups suggests varying levels of prior knowledge and learning needs among students.

3.2 Post-Test Results

After six treatment sessions, a post-test was administered to measure the changes in students' reading ability. The average post-test score of the experimental group increased to 79.64, while the control group reached 53.93. The comparison indicates that the experimental group showed a significantly greater improvement than the control group. This suggests that the use of mind mapping had a substantial impact on students' comprehension and retention of reading material. The results reinforce the value of incorporating visual learning strategies into reading instruction to support academic growth.

Table 1. Comparison of Average Pre-test and Post-test Scores

Group	Pre-test	Post-test	Improvement
Experimental (n=28)	35.14	79.64	+44.50
Control (n=29)	43.72	53.93	+10.21

The table presents a comparison of pre-test and post-test scores between two groups: the experimental group and the control group. The experimental group, consisting of 28 participants, showed a significant improvement in scores, increasing from 35.14 in the pre-test to 79.64 in the post-test, with a gain of 44.50 points. In contrast, the control group, which included 29 participants, also showed an improvement but to a much lesser extent, with scores rising from 43.72 to 53.93, resulting in a gain of 10.21 points.

3.3 Statistical Analysis

The data were analyzed using an independent sample t-test to determine whether the differences in scores between the two groups were statistically significant. The results revealed a t-count value of 3.37. At a significance level of 0.05 and degrees of freedom (df) = 55, the t-table value is 1.674. Since the t-count is greater than the t-table (3.37 > 1.674), the alternative hypothesis (H_a) is accepted, indicating a significant difference between the two groups.

Table 2. T-Test Results

Variable	Value
t-count	3.37
t-table (df = 55; $\alpha=0.05$)	1.674
Decision	H _a accepted

The table presents the results of an independent t-test to determine whether there is a significant difference between the two groups. The calculated t-value (t-count) is 3.37, while the critical t-value from the t-table at **df = 55** and $\alpha = 0.05$ is 1.674. Since the **t-count is greater than the t-table value, the decision is to accept the alternative hypothesis (H_a). This indicates that the difference in post-test scores between the experimental and control groups is statistically significant.

3.4 Interpretation of Results

Based on the post-test results, 26 out of 28 students (92.86%) in the experimental group achieved a score categorized as “successful” (≥ 65), while only 14 out of 29 students (48.28%) in the control group achieved the same. Overall, the score improvement was much higher in the experimental group. This indicates that the use of the mind mapping technique has a positive and significant effect on improving students’ reading comprehension. The data clearly demonstrate that students who were taught using mind mapping strategies outperformed those who received conventional instruction. These findings provide strong empirical support for incorporating mind mapping as an effective and impactful teaching approach in reading comprehension lessons.

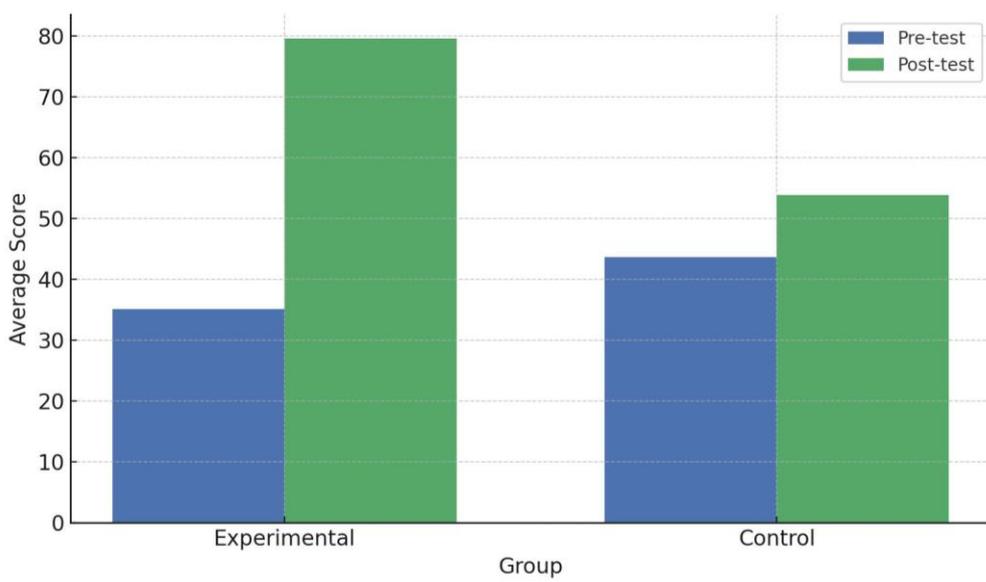


Diagram 1. Comparison of Pre-test and Post-test Scores

The bar chart above illustrates the comparison of average pre-test and post-test scores between the experimental group and the control group. The experimental group showed a significant increase from 35.14 to 79.64, while the control group only showed a small increase from 43.72 to 53.93. This dramatic improvement in the experimental group highlights the effectiveness of the mind mapping technique in enhancing students' reading comprehension skills. In contrast, the limited progress in the control group suggests that conventional teaching methods may not be as effective in addressing students' difficulties. The data clearly demonstrate that students who received instruction through mind mapping benefited from a more engaging and structured learning experience. These findings support the argument that innovative and student-centered strategies can lead to better learning outcomes in English language education.

4. Conclusion

Mind mapping has proven to be a highly effective strategy in enhancing the reading comprehension skills of eighth-grade students. The results obtained from statistical analysis, combined with direct classroom observations, indicate that the use of visual learning tools such as mind mapping significantly improves students’ understanding of reading materials.

This method allows learners to organize ideas, identify main points, and connect supporting details more effectively, which in turn leads to better comprehension scores. Additionally, the interactive nature of mind mapping stimulates students' cognitive engagement, encouraging them to think critically and make meaningful connections within the text. Beyond academic performance, mind mapping also contributes to creating a more dynamic and enjoyable learning environment. It fosters active participation, increases motivation, and cultivates a genuine interest in reading activities. Given these benefits, English teachers are strongly encouraged to integrate mind mapping techniques into their instructional practices. Doing so can not only support students in developing stronger reading skills but also promote a deeper appreciation for literature and lifelong learning.

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