

ENHANCING STUDENTS' READING COMPREHENSION THROUGH THE CAROUSEL BRAINSTORMING TECHNIQUE IN TEACHING NARRATIVE TEXTS

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Abstract

This study aims to determine whether there was a significant difference in reading comprehension of narrative text between tenth-grade students at SMK Negeri 1 Jarai who were taught using the Carousel Brainstorming technique and those who were not. The population consisted of all tenth-grade students (N = 346), with two classes selected as samples: 31 students in the experimental class and 29 students in the control class. Data were collected through pre-tests and post-tests and analyzed using SPSS. The results of the paired sample t-test and independent t-test showed a calculated t-value of 2.569 with a significance level of $p < 0.01$ (two-tailed) and $df = 58$, exceeding the critical t-table value of 1.672. Since the calculated t-value was greater than the critical value, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_a) was accepted. These findings indicate that the use of the Carousel Brainstorming technique significantly improves students' reading comprehension. This improvement is further supported by the use of engaging learning materials and active teacher involvement during the learning process.

Keywords: Reading comprehension, Carousel brainstorming, Narrative text.

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INTRODUCTION

One of the most important language abilities that students needed to develop was reading, which was at the centre of the educational process. Blakeley (2022) defined reading as a cognitive process that entailed decoding symbols to derive meaning. Reading was crucial since it may assist students in learning things like general knowledge and academic subjects (Leipzig & Henry, 2001). According to Utami, Yahrif et.al (2022), one of the linguistic skills that students should concentrate on is reading.

Reading comprehension is one of the most important skills in English language learning because it helps students understand, interpret, and evaluate the content of written texts. Sinambela & Sipayung (2023) state that reading is an action performed to communicate a message from the author through written words or language. This indicates that students receive information from the writer by engaging with the text. For learners of English as a foreign language (EFL), however, reading comprehension often becomes a challenging skill to master. Many students have difficulty finding the main ideas, making inferences, and

connecting information in the text. According to Al-Jarf (2021), these difficulties are caused by limited vocabulary, lack of background knowledge, and a lack of effective reading strategies. In line with previous study, Nuralasari & Haryudin (2021) argue that students' limited English vocabulary, which makes it difficult to organize word meanings for understanding, is one factor influencing their willingness to put in extra effort when reading. Therefore, teachers need to apply innovative and interactive learning techniques so that students are more motivated and actively involved in reading activities.

One type of text that often causes difficulties for students is narrative text, which requires an understanding of the plot, characters, conflicts, and moral messages. Narrative texts are important in high school curricula because they not only improve language skills but also foster students' imagination and critical thinking (Anderson & Anderson, 2018). However, many students read passively and rely entirely on the teacher's explanations, making the learning process less meaningful. English teacher at SMK Negeri 1 Jarai stated that some students are less interested in learning English because students think learning English is difficult, students have difficulty mastering reading texts and students still need guidance when reading, especially when reading narrative texts. Traditional teacher-centered teaching methods often do not encourage active participation or cooperation among students, which is essential for improving reading comprehension. Furthermore, Mahmood (2021) believes that active student-teacher interaction enhances the effectiveness of reading instruction. Reading comprehension, the teacher's approach, method, or instruction during the learning process, could all be affected by the teacher's role.

To overcome these problems, the Carousel Brainstorming technique has emerged as a cooperative learning strategy that encourages students to actively share ideas, discuss, and reflect on their understanding of the text. This technique involves dividing students into groups that move from one discussion station to another, with each station discussing different questions or topics related to the text being studied. According to Andriani (2018), the advantages of the Carousel brainstorming technique include assisting students in understanding the text and guiding them gradually from an easy assignment to a more challenging one. They will learn that reading is simple and enjoyable, which will allow them to examine the goals of the activity to ensure success. Through this process, students can exchange opinions, broaden their knowledge, and build a deeper understanding. In addition, Zulhijriani (2015) argues that students may generate unique ideas through brainstorming and achieve this with surprisingly little work. Students come up with fresh concepts on the subject they are given in class or express their thoughts on current affairs. To help students expand their language and understanding, they may respond spontaneously by sharing what they already know about the case. Research conducted by Lestari et.al (2023) shows that the use of the Carousel Brainstorming technique can significantly improve students' reading comprehension of recount texts. Similar results were also found by Yusrizal, Susanto, and Kurniawan (2025), who stated that this technique can develop critical thinking skills and improving students' reading comprehension in the era of digital learning.

However, research on the application of the Carousel Brainstorming technique in teaching narrative texts at the vocational high school (SMK) level is still limited. Most previous studies have focused on general secondary schools or on other types of texts such as descriptive and expository texts. In addition, there is still little empirical data showing the effectiveness of this technique in improving the reading comprehension of SMK students with diverse language proficiency backgrounds. This research gap has prompted the need for further study on the effectiveness of the Carousel Brainstorming technique in improving students' reading comprehension in learning narrative text. Therefore, this study aims to examine the

effectiveness of the Carousel Brainstorming technique in enhancing tenth-grade students' reading comprehension at SMK Negeri 1 Jarai. It is expected that this technique will create a more interactive learning environment, encourage student participation, and foster better understanding of narrative texts.

METHODOLOGY

According to Creswell (2017), a quasi-experiment is a situation in which participants are divided into groups by the researcher, but not at random. This study used a quasi-experimental method with a pretest–posttest control group design to determine whether there was a significant difference in reading comprehension skills between students who were taught using the Carousel Brainstorming technique and those who were not. The study conducted at SMK N. 1 Jarai in academic year 2024/2025. The population in this study were all tenth-grade students at SMK Negeri 1 Jarai, while the sample consisted of 60 students from two classes selected by purposive sampling techniques. Purposive sampling was a sample technique for determining with certain considerations (Sugiyono, 2013). One class was used as the experimental group that received treatment using the Carousel Brainstorming technique, while the other class was used as the control group that was taught using conventional methods. The sample were X.TKJ 2 and X.TKJ 3. Both groups were given a pretest to determine their initial ability to understand narrative texts. The experimental group then received treatment for eight meetings.

Data was collected in several stages, beginning with a pretest administered to both groups, followed by the implementation of the Carousel Brainstorming technique in the experimental class, while the control class was taught using conventional methods. Observations were made during the learning process to ensure that the treatment was carried out according to plan. After the entire treatment was completed, a posttest was administered to both groups to measure their reading comprehension. The research instruments used reading comprehension tests consist of 40 multiple choice questions covering five aspects of reading comprehension, namely identifying the main idea, specific details, sequence of events, inference, and vocabulary. Each item contained four answer options (A–D), with one correct answer. In this research, the researcher uses content validity to know the validity of the test. Researchers use content validity because they utilize pre-existing questions that have been edited again, both in terms of the questions and answers. And then, these modified questions are tested on non-sample classes or other groups to establish their validity.

Example Item

Once upon a time, there was a poor farmer who found a magical goose that laid one golden egg every day. Wanting to become rich quickly, he decided to cut open the goose to take all the gold inside. However, he found nothing and lost the goose forever.

Question

What is the main idea of the story?

- A. The farmer became rich because of the goose.
- B. Greed can lead to loss.
- C. The goose laid many eggs every day.
- D. The farmer sold the goose.

In this research, before giving the test, the researcher try out the instrument of the test, to know if the test is reliable or not for non-sample. To determine the reliability of the tests that are used

in this research, researchers calculated student scores using the Cronbach's alpha formula with a target value of ≥ 0.70 . Based on the try out, the results of reliability can be seen on table 1.

Table 1. Reliability Statistics

Cronbach's alpha formula	N of items
0,748	40

Based on the table above, it showed that Cronbach's alpha reliability was 0.748. Cronbach's alpha value, which meant that the tryout carried out in a non-sample class showed that the value was reliable. The teacher explains the principles, guides students through the procedures before they do it, and teaches how to use Carousel brainstorming.

To analyze the data, the researcher prepared the students' reading score, described the percentage of students who passed each question, ran a normality test to see if there was a significant difference between the pre- and post-tests, and tested our hypothesis to see if the Carousel brainstorming technique had any effect at all. The technique of data analysis used was statistical analysis or SPSS. In this case, the research test results for students on the sample were found using the SPSS statistics application by the writer. With the help of SPSS, an effective statistical tool, numerous statistical operations could be performed. To investigate the reading effect process, the researcher analyzed the data by using pair sample t-test and independent t-test. The experimental and control classes' reading comprehension levels were compared using an independent T-test to determine whether there had been any notable differences. In order to obtain data from the pre- and post-tests in this study, the research evaluated and did statistical computation using the SPSS software, which was based on two types of formulas:

1. To determine whether there was a significant difference in the reading comprehension of the students in the experimental and control class before and after the treatment, a pre-test was used.
2. An independent post-test was used to determine whether the students' post-test results in the experiment class had significant effects on their reading comprehension

Criteria for Testing Hypothesis

The following criteria would be used to test the hypothesis:

In this research, the writer took two classes as the sample which both of classes involve 29 and 31 students and sig. 5% (0,05). While degree of freedom is $60-2 = 58$. T table = 1.668. if t-obtained $>$ t-table (1,672). The null hypothesis (H_0) was rejected, and alternative hypothesis (H_a) was accepted and if the t-obtained $<$ table (1,672), the null hypothesis (H_0) was accepted and the alternative hypothesis was rejected.

RESULT AND DISCUSSION

The data in this study had been presented based on the tests that had been given and had been presented in the form of scores. Students in the experimental class and control class conducted the test, which had 40 multiple-choice questions, and the test had been given to the students before and after the treatment. There were two main findings of the study that had been drawn from the test results (descriptive statistics) and statistical analyses of the data.

3.1 Descriptive Statistics

Based on the result of the test, it was known that in pre-test of experimental class showed the lowest score was 32,5 and the highest score was 62,5. The mean score 46,45 the standard derivation was 7,873421 In the post-test, the lowest score was 50 and the highest score was 80 with the mean was 66,77 and standard derivation was 8,571181.

Furthermore, the test result in the pre-test of control class showed the lowest score was 32,5 the highest was 57,5 with the mean score 39,55 and the standard derivation was 6,757347. In the post-test, the lowest score was 37,5 and the highest score was 70 with the mean score was 45,34 and the standard derivation was 7,704794.

Table 2. Frequency, Mean and Standard Deviation of Students Reading Comprehension (Pre-test)

Level of Reading Achievement	Experimental Class			Control Class		
	Mean	Standard Deviation	Frequency and Percentage	Mean	Standard Deviation	Frequency and Percentage
Verry Good	-	-	-	-	-	-
Good	62,5	.000	3 9,35%	-	-	-
Enough	46,44	3,630	11 35,71%	39,55	3,535	3 10,76%
Poor	32,5	3,245	17 54,97%	32,5	3,668	26 89,24%

The result showed there was significant difference in students reading comprehension in experimental class. In pre-test there were 3 students (9,35%) categorized Good with the mean score 62,5, there were 11 students (35,71%) categorized Enough with the mean score 46,44, and there were 17 students (54,97%) categorized Poor with the mean score 32,5.

Meanwhile, result showed there was significant difference in students reading comprehension in control class. In pre-test there were 3 students (10,76%) who were in enough category with the mean score 39,55 and 26 students (89,24%) who were in very good category with the mean score 39,55.

Table 3. Frequency, Mean and Standard Deviation of Students Reading Comprehension (Post-test)

Level of Reading Achievement	Experimental Class			Control Class		
	Mean	Standard Deviation	Frequency and Percentage	Mean	Standard Deviation	Frequency and Percentage
Verry Good	80	0	3 9,35%	-	-	-
Good	70,44	4,307	17 54,97%	66,25	3,75	2 6,72%
Enough	57,04	3,165	11 35,71%	50,27	3,215	9 31,28%
Poor	-	-	-	40,55	2,290	18 62,55%

Based on the results, there was significant difference in students reading comprehension in experimental class. In post-test there were 3 students (9,35%) categorized Very Good with the mean score 80. and 17 students (54,97%) categorized Good with mean score 70,44. 11 students (35,71%) categorized enough with the mean score 57,04 In the post-test control class there were 2 students (6,72%) categorized good with the mean score 66,25. 9 students (31,28%) categorized enough the mean score 50,2. 18 students (62,55%) categorized poor the mean score 40,55. The analysis indicated a marked improvement in reading comprehension of the students in experimental class through implementing Carousel Brainstorming Technique. In addition, it was observed that the students' reading comprehension in the control group had only slightly improved compared to the pre-test.

3.2 Result of Statistical Analysis

Two statistical analyses were used in this study: Paired sample t-test and independent sample t-test. To find out whether there was any significant improvement of students' reading comprehension before and after they were taught by using the Crousel brainstorming technique in experimental class and control class without using the Crousel brainstorming technique the writer used Paired sample t-test. However, independent sample t-test was used to find out whether there was any significant improvement on students' reading comprehension between both classes.

3.2.1 Paired Sample T-test of Reading Comprehension in Experimental Group

To find out whether there was significant progress in students reading comprehension before and after treatment or pre and post-test. The result of students reading comprehension in pretest and post test conducted by researcher, paired sample t-test was used to process the data.

Table 4. Paired Sample T-test of Reading Comprehension in Experimental Group

Variables	Mean Pre-Test	Mean Post-Test	Mean Difference	t-obtained	Sig.(2-tailed)
Reading Comprehension (total)	40,48	69,87	2,939	1,905	.066
Main idea	12.58	15.97	3.387	4.768	.000
Details	10.65	14.68	4.032	7.470	.000
Sequence	10.32	12.58	2.258	3.724	.001
Inference	10.16	12.74	2.581	5.657	.000
Vocabulary	11.77	13.87	2.097	2.755	.010

In table 4, the results of the pre-test and post-test in the experimental class were compared by the researcher, in terms of aspects of reading comprehension. Based on the table above, the average pre-test reading comprehension is 40.48, the average post-test reading comprehension is 69.87 with an average difference of 2.939. Meanwhile, the t-value can be obtained at 1.905 at a significance level of .066. This means that the test can be said to be reliable because the result is higher than before. Detail was the aspect that showing highest improvement, it showed by the mean difference of 4.032 between pre-test and posttest 10.65 and 14.68. Next followed

by main idea, there was mean difference of 3.387 between the pre-test and post-test 12.58 and 15.97. Meanwhile, the least significant aspect was vocabulary, with a mean difference of 2.097 between the pre-test and post-test 11.77 and 13.87. It could be concluded that all aspects of reading comprehension in the experimental group had a significant difference in every aspect before and after the treatment.

3.2.2 Paired Sample T-test of Reading Comprehension in Control Group

Table 5. The Result of Paired Sample T-Test in Reading Comprehension of Control

Variables	Mean Pre-test	Mean Post-test	Mean Difference	t- obtained	Sig.(2- Tailed)
Reading Comprehension (Total)	37,5	50,51	1,301	1.144	.262
Main Idea	11.21	11.38	.172	.328	.745
Detail	10.17	12.76	.2.586	4.848	.000
Sequence	10.17	11.55	1.379	2.816	.009
Inference	10.43	11.90	1.552	2.768	.010
Vocabulary	11.38	12.76	1.379	1.864	.073

Based on the table above, the average pre-test reading comprehension is 37.5, the average post-test reading comprehension is 50.51, with an average difference of 1.301. Meanwhile, the t value obtained is 1,144 at a significance level of .262. Furthermore, looking at the reading comprehension aspect, the main idea value is 11.21, the main idea post-test average is 11.38 with an average difference of .172, Meanwhile the t-value obtained is .328 at a significance level of .745, Next are the details, the average value on the pre-test is 10.17 and on the post-test is 12.76, with an average difference of .2.586, Meanwhile the t-value can be obtained at .4.848, at a significance level of .000, Then, sequence The average on the pre-test was 10.17 and on the post-test it was 11.55 with an average difference of 1.397, Meanwhile the t-value obtained was 2.816 at a significance level of .009. The next aspect is Inference, the average value on the pre-test is 10.43, and on the post-test is 11.90, with an average difference of 1.552, Meanwhile the t-value obtained is 2.768 at a significance level of .010. The last one is vocabulary, the average score on the pre-test is 11.38, and on the post-test, it is 12.76, with an average difference of 1.379, Meanwhile, the t-value can be obtained at 1.864 at a significance level of .073. It can be concluded that all aspects of reading comprehension in the control class only experienced a slight increase in the control classes in every aspect after implementing conventional teaching methods.

3.2.3 Independent Sample T-test of Reading Comprehension in Control Group

To find out whether there was significant difference in students reading comprehension before and after treatment, the result of reading pre-test and post-test compared by researcher, paired sample t-test was used.

Table 6. The Result of Independent T-Test for Reading Comprehension

Variable	Post-tes					Mean Difference	
	Meaan	Mean	t-	df	t-	Sig	Post-Exp and Post-Control
Reading Comprehension	Exp 69,87	Co 50,51	obtained 2,569	58	table 1,672	.001	6.051

From the result, it was found that the value of t-obtained was 2,569 at the significant level was .001. The value of t-obtained was higher than critical values of t- table which was 1,672 with df was 58, Based on result, it can be concluded that the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_a) was accepted with data analysis. It was found out there were significant differences between students reading comprehension of the tenth grade at SMK Negeri 1 Jarai in experimental class who were taught by using Carousel Brainstorming Technique and those are not. The experimental group outperformed the control group on the post-test. It can be concluded that Carousel Brainstorming Technique can improve students' reading comprehension.

3.2.4 Effect Size Analysis

In addition to statistical significance testing, the effect size was calculated to determine the magnitude of the Carousel Brainstorming technique on students' reading comprehension. Cohen's d was used as the effect size measure because it provides practical information regarding the strength of the treatment effect. Cohen's d was calculated using the post-test mean scores of the experimental and control groups:

Experimental group = 69.87

Control group = 50.51

Based on the pooled standard deviation, the obtained Cohen's d value was approximately 1.20. According to Cohen (1988), an effect size of 0.20 is considered small, 0.50 medium, and 0.80 or above large. Therefore, the obtained effect size indicates a large practical effect, suggesting that the Carousel Brainstorming technique not only produced statistically significant improvement but also had substantial educational benefits in enhancing students' reading comprehension

Discussion

The results of this study indicate that the implementation of the Carousel Brainstorming technique significantly improves students' reading comprehension skills in narrative texts compared to conventional learning methods. The results of the independent sample t-test ($t_{\text{obtained}} = 2.569$, $p = .001 < .05$) show a significant difference between the experimental class and the control class. This means that students taught using the Carousel Brainstorming technique obtained higher post-test scores than students taught using traditional methods. This improvement may be due to the interactive and collaborative learning atmosphere, where students can share ideas and construct meaning together. These findings are in line with research by Lestari et. al (2023), who found that this technique increases student engagement and understanding through active participation. Similar results were also reported by Yusrizal et.al (2025), who showed that this strategy is effective in improving critical thinking and

reading comprehension skills in the digital age. In addition, research by Fadilaturrahmah, Oktaviani, & Wahyuni (2025) who found that the learning and teaching process became more interactive because of implementing interactive learning strategy like Hello English App, not only to improve speaking skill but also make students enhanced involvement and collaboration among peers.

In addition, the results of the paired sample t-test in the experimental class showed a significant improvement in all aspects of reading comprehension—namely, identifying main ideas, understanding details, sequence of events, inferences, and vocabulary—with the greatest improvement in the aspect of details. This shows that the Carousel Brainstorming technique helps students to focus more on understanding information in the text in a structured manner. According to Kurniasih & Sani (2020), cooperative learning strategies such as brainstorming allow students to process information more deeply through discussion and peer feedback. Similarly, Johnson et.al (2014) emphasized that cooperative interactions can increase student responsibility and engagement, which positively impacts critical thinking skills and reading comprehension.

The improvement in learning outcomes in the experimental class can also be explained through social constructivism theory, which states that learning is most effective through social interaction and collaboration. In the Carousel Brainstorming technique, students move from one station to another to discuss various aspects of the text. This process allows for the exchange of knowledge, negotiation of meaning, and exposure to different points of view. This type of interaction is in line with Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD), in which students learn better with the support and guidance of their peers. As stated by Marzano (2019), effective learning must involve active thinking processes to increase understanding and long-term memory.

Unlike the experimental class, the control class taught using conventional methods showed only a slight improvement in post-test results. This shows that traditional methods are not yet able to provide sufficient opportunities for students to interact and participate actively. These findings support Al-Jarf's (2021) opinion that a passive learning environment can limit students' ability to develop effective reading strategies. In line with Fadilaturrahmah (2022) confirm that interactive media and technique in teaching like Youtube Video might grow students' interest and motivation in learning English. Furthermore, research by Guthrie & Klauda (2016) also confirms that motivation and engagement are important factors that influence improvements in reading comprehension; therefore, interactive techniques such as Carousel Brainstorming can create a more meaningful reading experience.

Besides achieving statistical significance, the large effect size demonstrates that the Carousel Brainstorming technique has meaningful educational value in classroom practice. This finding suggests that the technique can substantially improve students' reading comprehension performance, making it an effective instructional strategy for teaching narrative texts in EFL classrooms.

Overall, the results of this study prove that the Carousel Brainstorming technique can create a dynamic, student-centered learning environment that encourages interaction, collaboration, and a deeper understanding of the text. In line with Slavin's (2015) opinion, group cooperation and shared responsibility in learning can improve students' academic achievement as well as their social skills. Thus, this study confirms that the Carousel Brainstorming technique is an

effective teaching approach to improve EFL students' reading comprehension, especially at the vocational high school level, which requires interesting and participating learning methods.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the application of the Carousel Brainstorming technique has a significant effect on improving the reading comprehension skills of 10th grade students at SMK Negeri 1 Jarai. This is proved by the results of the independent sample t-test which shows that the t-obtained value (2.569) is greater than the t-table (1.672) at a significance level of 0.05. Thus, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted, which means that there is a significant difference between students who were taught using the Carousel Brainstorming technique and students who were taught using conventional methods.

This finding proves that the Carousel Brainstorming technique is effective in creating an interactive, collaborative, and enjoyable learning atmosphere. Through group discussions and rotation between stations, students are more active in sharing ideas, responding to their friends' opinions, and building a deeper understanding of the narrative text. Based on the results, it is recommended that English teachers at the vocational high school level apply the Carousel Brainstorming technique as an alternative learning strategy in teaching narrative texts and other types of texts. Further research could expand the focus on the affective and cognitive aspects of students or combine this technique with digital media to enrich the learning process in the era of the 5.0 education revolution.

ETHICAL STATEMENTS

This study was conducted in accordance with established ethical principles, including informed consent, protection of informants' confidentiality, and respect for local cultural values. Special consideration was given to participants from vulnerable groups to ensure their safety, comfort, and equal rights to participate. No external funding was received, and the author declared no conflict of interest. All data and information presented were collected through valid research methods and have been verified to ensure their accuracy and reliability. The author expresses their gratitude to the informants for their valuable insights and to the anonymous reviewers for their constructive feedback on an earlier version of this manuscript. The author takes full responsibility for the content and conclusions of this article

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