

The Effect of Herringbone Technique on the Tenth-Grade Students' Reading Comprehension Achievement

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Abstract: This study used a method to compare how well students can read and understand things. The study had 75 students from the grade of TKR in the school year 2023/2024. There were 38 students in one group and 37 students in another group. The students took a test before. After the study to see how well they could read and understand things. The test had 40 questions that the students had to answer. The people doing the study looked at the results to see if the students got better at reading and understanding things. They found out that the students in the group got much better at reading and understanding things. Their scores went from 67.10 to 86.50. The students in the group also got better but not as much. Their scores went from 55.74 to 66.35. The people doing the study looked at the numbers. Found out that both groups of students got better at reading and understanding things. The first group of students did better than the second group. The study found that the Herringbone Technique is better than the way of teaching for helping students understand what they read. The Herringbone Technique is a way to teach students how to read and understand things. This study helps show that the Herringbone Technique is a way to teach vocational high school students how to read and understand things. The study helps teachers know that the Herringbone Technique can be used to help students like the ones, at TKR.

INTRODUCTION

Reading comprehension is a skill that students need to learn when they study the English language. This is because it helps students to find the ideas in a text, understand the supporting details, and figure out what the text means. To be good at reading comprehension, students need to know a lot of words, understand how sentences are structured, have some background knowledge, and be able to think while they read. English is used around the world for education and work, so it is really important for students to be able to read and understand English texts if they want to succeed. Duke, Ward, and Pearson (2021) explained that reading comprehension is not an automatic process but requires vocabulary knowledge, background knowledge, reading fluency, and comprehension strategies to construct meaning from texts. However, a lot of students who are

learning English as a foreign language have trouble understanding English texts, especially when it comes to finding the main idea and supporting details.

Some studies have shown that students have trouble with reading because they do not know enough vocabulary, do not understand sentence structures, lack effective reading strategies, and have low motivation. These problems are also found in Indonesia. For example, Yasa et al. (2023) found that high school students had difficulty understanding English texts because of limited vocabulary and anxiety. Likewise, Loeneto and Inderawati (2020) reported that students in Palembang had difficulty identifying the main ideas, understanding vocabulary, and recognizing relationships between ideas, resulting in poor reading achievement. Brooks et al. (2021) also argued that students need academic vocabulary development and active reading strategies to improve their reading comprehension. These findings indicate that teachers need to apply more effective instructional strategies to enhance students' reading comprehension.

One way that teachers can help students is by using the Herringbone Technique. This technique helps students organize the information they read by answering six guiding questions: who, what, when, where, why, and how. Through this process, students can identify important details before determining the main idea of a text. Hasanah, Ni'mah, and Kholili (2023) found that the Herringbone Technique significantly improved students' reading comprehension and encouraged greater participation, collaboration, and critical thinking during reading activities. Similar findings were also reported by Humairah, Sakkir, and Aeni (2023), who concluded that the Herringbone Technique effectively enhanced students' comprehension of narrative texts.

Nevertheless, the majority of previous studies have been carried out in general senior high schools, with relatively few examining the effectiveness of the Herringbone Technique in vocational high school settings. At SMK Negeri 2 Palembang, many students continue to experience difficulties in comprehending English texts, particularly in finding main ideas and supporting details. These difficulties affect their reading achievement and classroom performance. Setyadik, Yundayani, and Suratinah (2023) emphasized that the Herringbone Technique is also effective in vocational high schools because it helps students organize information systematically through the 5W+1H framework and increases their engagement during reading activities.

Therefore, this study investigated whether the Herringbone Technique could improve the reading comprehension achievement of tenth-grade students at SMK Negeri 2 Palembang. The study compared students' reading comprehension before and after the implementation of the Herringbone Technique and also compared the achievement of students taught using the Herringbone Technique with those taught through conventional instruction. The findings are expected to contribute empirical evidence regarding the effectiveness of the Herringbone Technique in vocational high school contexts and provide English teachers with an alternative instructional strategy for improving students' reading comprehension. Hasanah et al. (2023) suggested that further studies should examine the application of the Herringbone Technique in different educational settings to showed the evidence of its effectiveness.

RESEARCH METHOD

Research Design

This study used an approach with a special kind of research design called quasi-experimental to see how the Herringbone Technique affects students' reading comprehension. The Herringbone Technique was chosen for this study. The researcher could not assign students to groups randomly because the school had already formed the classes. This study was done during the 2023/2024 year at SMK Negeri 2 Palembang.

According to Creswell (2021), quasi-experimental design is appropriate in educational research when random assignment is not possible, but the researcher still wants to examine cause-and-effect relationships between variables. Similarly, Sugiyono (2020) explains that quasi-experimental research is commonly used in classroom settings because researchers work with intact groups such as existing classes. In addition, Fraenkel and Wallen (2022) emphasize that pre-test and post-test designs are effective for measuring learning improvement after treatment.

The research had two classes: one class got the Herringbone Technique and the other class got the reading instruction. Both classes took a test before and after the treatment. This design allowed to compare students' reading comprehension before and after the treatment and determine the effectiveness of the Herringbone Technique.

Research Participants

The students in this study were tenth-grade students from the Teknik Kendaraan Ringan program at SMK Negeri 2 Palembang. There were 150 students in total divided into four classes. The researcher picked two classes that were similar in skills and class participation.

According to Cohen, Manion, and Morrison (2022), selecting intact classes in educational research is acceptable when random sampling is not possible, as long as the groups have comparable characteristics. Ary et al. (2021) also state that purposive selection of participants is often used in classroom research to ensure relevance to the research objectives.

The final group of students had 75 students. One class, Class X TKR 2 had 38 students and received the Herringbone Technique. The other class, Class X TKR 1 had 37 students and received the usual reading instruction. These students were selected because they had studied report texts and were suitable for applying the Herringbone Technique.

Data Collection Techniques

Data was collected through tests, observations, and documents. The main test was a 40-question multiple-choice test on report texts. The Herringbone Technique was used to support students in answering the test. The test was given twice, before and after the treatment.

According to Brown (2021), tests in language learning are essential tools for measuring students' achievement and progress over time. Meanwhile, Harmer (2021) states that structured reading strategies such as graphic organizers help learners improve comprehension by guiding them to identify key information in a text.

The class that received the Herringbone Technique learned by identifying who, what, when, where, why, and how before determining the main idea. The other class learned using conventional reading instruction. Observations were conducted during the learning process, and documentation was collected to support the data.

Data Validity and Data Analysis

The test was checked to ensure validity. Two English teachers at SMK Negeri 2 Palembang reviewed the test items. The test obtained a high validity score of 1.00. Before the study, the test was tried out with other students to measure reliability. The reliability test showed that the instrument was consistent and suitable for data collection.

According to Cohen et al. (2022), validity and reliability are essential in educational research to ensure that instruments measure what they are intended to measure consistently. Similarly, Dörnyei (2021) emphasizes that statistical analysis such as t-tests is commonly used in

language education research to determine significant differences between groups.

The data was analyzed using a computer program. First, descriptive statistics were calculated. Then normality and homogeneity tests were conducted. A paired-sample *t*-test was conducted to determine whether there was a significant improvement in students' reading comprehension, while an independent-sample *t*-test was performed to compare the performance of the experimental and control groups. Statistical significance was established at a probability value of less than 0.05.

RESULTS AND DISCUSSION

Prior to hypothesis testing, the data were evaluated to ensure that they satisfied the assumptions for parametric statistical analysis. The normality of the pre-test and post-test scores was examined using the Shapiro–Wilk test, whereas the homogeneity of variances between the experimental and control groups was assessed through Levene's test.

Table 1. Results of the Normality and Homogeneity Tests

Test	Group	Statistic	Sig.	Interpretation
Shapiro–Wilk (Pre-test)	Experimental	0.963	0.240	Normal
Shapiro–Wilk (Pre-test)	Control	0.967	0.341	Normal
Shapiro–Wilk (Post-test)	Experimental	0.949	0.084	Normal
Shapiro–Wilk (Post-test)	Control	0.958	0.178	Normal
Levene's Test (Pre-test)	Experimental & Control	3.215	0.077	Homogeneous
Levene's Test (Post-test)	Experimental & Control	1.370	0.240	Homogeneous

As shown in Table 1, the Shapiro–Wilk test yielded significance values above 0.05 for both the pre-test and post-test scores in the experimental and control groups, indicating that the data were normally distributed. Similarly, Levene's test produced significance values greater than 0.05, suggesting that the variances between the two groups were homogeneous. These results confirmed that the assumptions required for conducting parametric statistical analyses were met.

Descriptive Statistics

Descriptive statistics were employed to summarize students' reading comprehension achievement before and after the treatment. A comparison of the mean scores is presented in Table 2.

Table 2. Descriptive Statistics of Students' Reading Comprehension Scores

Group	N	Pre-test Mean	Post-test Mean	Mean Gain
Experimental	38	67.10	86.50	19.40
Control	37	55.74	66.35	10.61

As presented in Table 2, both the experimental and control groups showed improvement following the instructional process. Nevertheless, the experimental group, which was taught using the Herringbone Technique, exhibited a considerably greater gain than the control group. The mean score of the experimental group increased by 19.40 points, whereas the control group experienced an improvement of only 10.61 points. These results indicate that the Herringbone Technique was more effective than conventional instruction in enhancing students' reading comprehension achievement.

Paired-Sample *t*-Test

To determine whether a significant improvement occurred in students' reading comprehension before and after the treatment, paired-sample *t*-tests were performed for both the experimental and control groups.

Table 3. Results of the Paired-Sample *t*-Test

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Group	Mean Difference	<i>t</i>	Sig. (2-tailed)
Experimental	-19.934	-25.005	0.000
Control	-10.608	-12.212	0.000

As presented in Table 3, both groups showed statistically significant improvement after the instructional process ($p < 0.05$). The experimental group obtained a larger mean difference ($M = -19.934$) and a higher t value than the control group, indicating that students who learned through the Herringbone Technique experienced greater improvement in reading comprehension than those who received conventional instruction.

Independent-Sample *t*-Test

An independent-sample *t*-test was performed to compare the post-test scores between the experimental and control groups.

Table 4. Results of the Independent-Sample *t*-Test

Variable	Experimental Mean	Control Mean	Mean Difference	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Reading Comprehension	86.58	66.35	20.23	17.575	73	0.024

As presented in Table 4, a statistically significant difference was found in the post-test scores between the experimental and control groups ($t = 17.575$, $df = 73$, $p = 0.024$). The experimental group obtained a mean score of 86.58, while the control group recorded a mean score of 66.35, with a mean difference of 20.23 points. These results suggest that the students who were instructed using the Herringbone Technique demonstrated significantly better reading comprehension performance than those who received conventional instruction.

The results of this study revealed that the Herringbone Technique exerted a positive and significant influence on students' reading comprehension. The outcomes of the descriptive statistics, paired-sample *t*-test, and independent-sample *t*-test consistently demonstrated that the experimental group achieved better performance than the control group. These findings confirm that the implementation of a structured reading strategy can effectively improve students' reading comprehension, particularly in recognizing main ideas and supporting details within a text.

The improvement in the experimental group can be explained by the nature of the Herringbone Technique itself, which guides students to analyze a text through the six key questions (who, what, when, where, why, and how). This structured approach helps learners organize information visually, making comprehension more systematic and less overwhelming. According to Harmer (2021), effective reading instruction should provide learners with clear strategies that help them process information actively rather than passively reading texts. The Herringbone Technique aligns with this principle because it encourages active engagement with the text.

Similarly, Grabe and Stoller (2020) emphasize that reading comprehension is a complex cognitive process that requires learners to integrate background knowledge, text structure awareness, and strategic processing. The Herringbone Technique supports these components by helping students break down information into smaller, meaningful parts, which ultimately improves comprehension.

The results of this study are also consistent with the findings of Creswell (2021), who highlights that instructional interventions in quasi-experimental research often show stronger effects when they provide clear, guided learning steps. In this study, students in the experimental group were given structured guidance through the diagram, which made it easier for them to identify relationships within the text.

Furthermore, Brown (2021) states that reading comprehension improves when learners are

exposed to strategies that encourage prediction, inference, and detailed analysis. The Herringbone Technique naturally promotes these skills because students must locate specific information before determining the main idea. This step-by-step process helps reduce confusion and increases comprehension accuracy.

In addition, according to Anderson (2020), strategic reading instruction is essential for developing learners' metacognitive awareness, allowing them to monitor their understanding while reading. The Herringbone Technique functions as a metacognitive scaffold that helps students evaluate what they understand from a text and what information is still missing.

Nation (2021) also argues that vocabulary knowledge and structured input play a crucial role in reading comprehension development. The use of guided questioning in the Herringbone Technique helps students connect vocabulary with contextual meaning, which supports deeper comprehension of the text.

Moreover, research by Richards (2020) and Renandya (2021) highlights that reading instruction becomes more effective when teachers use explicit strategy instruction rather than relying solely on traditional comprehension questions. This supports the present study, where students in the experimental group showed greater improvement due to structured guidance.

The results are also in line with several similar studies. For example, a study by Siahaan (2021) found that the Herringbone Technique significantly improved students' ability to identify main ideas and supporting details in reading texts. Another study by Simbolon (2022) reported that students taught using the Herringbone Diagram showed higher reading achievement compared to those taught using conventional methods. Likewise, Hasanah (2020) concluded that the technique not only improved comprehension but also increased student engagement during reading activities.

The control group, which was taught using conventional methods, showed only moderate improvement. This suggests that traditional reading instruction may not be sufficient to fully develop students' higher-level comprehension skills. While students still improved due to repeated exposure and practice, the absence of a structured strategy limited their ability to organize and interpret information effectively.

Overall, the findings support the idea that visual and structured learning strategies are particularly beneficial for vocational students, who often require clearer guidance in understanding academic texts. The Herringbone Technique not only improves comprehension scores but also enhances students' engagement in the learning process, as it provides a clear and manageable way to approach reading tasks.

These results strengthen previous studies which reported that the Herringbone Technique is effective in improving reading comprehension across different educational contexts. Therefore, it can be concluded that the use of structured graphic organizers such as the Herringbone Technique is a practical and effective alternative for teaching reading comprehension in English classrooms.

CONCLUSION

This study looked at how the Herringbone Technique affects students' ability to understand what they read at SMK Negeri 2 Palembang. The Herringbone Technique really helps students understand what they read better than the way of teaching. The students who used the Herringbone Technique got scores going from 67.10 to 86.50 which is a big improvement. The other group of students who did not use the Herringbone Technique also got scores but not as good, going from 55.74 to 66.35. The test results showed that the Herringbone Technique is really better at helping students understand what they read.

The Herringbone Technique also helped students find the ideas, details and how the text is

organized using a simple framework, with 5W+1H. This framework helped students understand the text better and made it easier for them to process information.

The Herringbone Technique is a way to help students understand what they read especially in vocational high school. This study showed that the Herringbone Technique is an effective instructional strategy for helping students comprehend English texts. It can support teachers in guiding students to develop better reading comprehension during classroom learning. Furthermore, the Herringbone Technique serves as an alternative teaching approach that facilitates students' understanding of English reading materials.

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