Jurnal Onoma: Pendidikan, Bahasa dan Sastra, **Vol. 10, No. 3, 2024**

The Use of Problem-based Learning Method Assisted with Story Mapping to Improve Reading Comprehension

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Abstract

This research aims to prove whether the use of problem-based learning method assisted with story mapping can improve the reading comprehension of the eighth grade students of SMP Negeri 4 Palu. The researcher applied a quasi-experimental research design. The sample was selected through a purposive sampling technique, consisting of experimental and control groups with a total sample of 60 students. The data were collected through a reading test consisting of the pre-test and post-test. The collected data was analyzed statistically using SPSS 22. By using a 0.05 level of significance with the degree of freedom (58), the researcher found the sig. value was smaller than the chosen alpha level (0.001<0.05). It reveals that the hypothesis is accepted or the use of Problem-based Learning method assisted with Story Mapping can improve the reading comprehension of the eighth grade students of SMP Negeri 4 Palu. The implication of the findings were the use of PBL method assisted with story mapping can train students' thinking and collaborative skills, thus making them more actively participate in the discussion and engage in critical and creative thinking.

Keywords: *Reading Comprehension, Problem-based Learning Method, Story Mapping*

Introduction

Reading is one of the essential skills in improving knowledge and understanding for students. By comprehending the reading text, readers will get a new vocabulary and ideas. Students need to be able to understand the words, sentences, and the whole text related to the context to get a gist of a text in reading comprehension (Rosari & Mujiyanto, 2016). It means that reading comprehension is not only knowing about the essence of the reading text but being able to understand the meaning and components of the text. Reading comprehension aims to provide an overall understanding of what is presented in the text, rather than simply knowing the meaning of a word or sentence. Reading comprehension also needs feedback from the reader to make the reading activities more active.

The objective of learning reading as stated in the Merdeka Curriculum (2022) in junior high school is students are expected to find and evaluate the purpose of the text and conclude after understanding the information in different text types. They identify the purpose of the text and conclude after understanding the information implied in the

text. The fact that occurs in the school after the researcher observed the learning process of the eighth grade students of SMP Negeri 4 Palu, some students had low reading comprehension ability. They had a lack of vocabulary makes it difficult for them to understand the meaning and identify the main idea in the text. Previous studies by Millah (2018) also found that the students were confused in determining the main idea of the text and each paragraph. This happens due to the lack of awareness of students' reading habits and the importance of reading. It is a challenge for teachers to attract students' interest in reading.

Tindowen et al., (2017) states that 21st-century learning programs have launched significant learning methods by engaging students in every learning activity. Problem-based learning is one of the learning models that fits the demands of age development and has a positive impact on students learning (Mahmuda, 2023). Nurliza & Fahmi (2021) states choosing an appropriate learning method to develop students' critical thinking skills in order to bring out their understanding and creativity is an important aspect of achieving learning effectiveness. Therefore, problem-based learning involves students directly in problem-solving which aims to train and improve students' ability to think critically and creatively in solving problems.

Then, story mapping will be applied in this research as the learning media to help the students comprehend the text more easily. Story mapping has a great potential to help the student have a better understanding of reading a text (Kusumaningrum, 2016). Story mapping is used to teach reading comprehension by encouraging students to identify story content using a specific structure. Students can arrange the important elements of a story text by using story mapping, which is a visual representation (graphic organizer) to determine the theme, characters, setting, and resolution of the story (Anggraeyni et al., 2015).

The use of problem-based learning can critically train students' thinking skills in solving problems (Syahfutra & Niah, 2019). Meanwhile, the use of story mapping aims for the students to write down or re-explain the story elements according to the students' thoughts and understanding after reading (Sundari et al., 2019). Both of these approaches have a similar goal to train the students' thinking skills. Besides solving the problems, using problem-based learning with story mapping can also train student collaboration (Nurliza & Fahmi, 2021). Students can discuss and exchange their thoughts and opinions to solve problems and put them into a story map.

Several studies related to the use of problem-based learning and story mapping have also been conducted by some researchers. The first study by Syahfutra & Niah (2019). This study found several problems in students' reading comprehension in finding factual information, main ideas, antonyms and synonyms, and a lack of student motivation in reading. The result of this study shows that PBL is one of the teaching strategies that may be able to enhance students' motivation and reading comprehension. It is proven by the increase of the students' number in reading aspect criteria. On the pre-test, only 9 out of 20 students seemed to understand the text without difficulty, and after the post-test, it increased to 14 students.

The second study, Millah (2018) employed story mapping to increase students' reading comprehension in identifying the main concept. According to the results, it indicates that the story mapping could improve the students' reading comprehension in identifying the main idea. Students are also more enthusiastic, participating, and motivated to learn story mapping. Those previous studies discussed the successful use of story mapping and problem-based learning. It interests the researcher in conducting the research. The difference with this study is it will be a quasi-experimental research

design using two groups. Then, this study will combine the use of both approaches the problem-based learning method assisted with story mapping to prove whether can improve reading comprehension.

Method

The researcher applied a quasi-experimental research design in which the sample consisted of experimental and control groups. In a quasi-experimental design, both groups are applied to the pre-test and post-test, however, the treatment is only applied to the experimental group.

The population consisted of the eighth grade students of SMP Negeri 4 Palu with a total population is 350 students divided into 11 classes. The sample was purposively selected according to the English teachers' recommendation, therefore class VIII Tombolotutu was designated as the experimental group, and class VIII ST. Hasanuddin as the control group, each group consisted of 30 students.

This research was conducted in eight meetings, one meeting for the pre-test, six meetings for the treatment, and the last meeting for the post-test. The research instrument used a test that consisted of a pre-test and post-test. The test type consisted of 15 numbers of the multiple choice and 5 numbers of the essay test. After conducting the test, the collected data was analyzed statistically using SPSS 22.

Results

After obtaining data on the pre-test and post-test results, the researcher classified it into a table according to the students' ability based on the test results. The researcher obtained and calculated data using SPSS 22 including the normality test, homogeneity test, and independent sample t-test. The classification of student scores is illustrated in the following table.

Table 1. The Classification of the Experimental Group Result

		Pre-Test		**Post-Test**	
Classification	**Score**	Frequency	Percent	Frequency	Percent
Very Good	90-100	-	-	3	10.0%
Good	80-89	1	3.3%	12	40.0%
Fair	70-79	-	-	11	36.7%
Poor	40-69	22	73.3%	4	13.3%
Very Poor	0-39	7	23.3%	-	-
Total		30	100%	30	100%

Table 2. Classification of the Control Group Result

Classification	Score	Pre-Test		Post-Test	
		Frequency	Percent	Frequency	Percent
Very Good	90-100	1	3.3%	1	3.3%
Good	80-89	-	-	3	10.0%
Fair	70-79	-	-	10	33.3%
Poor	40-69	22	73.3%	15	50.0%
Very Poor	0-39	7	23.3%	1	3.3%
Total		30	100%	30	100%

Table 1 shows the difference between the pre-test and post-test on the experimental group. There were twenty-two students (73.3%) in the category poor, seven students (23.3%) in the category very poor, and only one student (3.33%) in the category good. However, it changed after implementing the PBL method assisted with story mapping. It can be seen from the result of the post-test, there were three students (10%) got a very good category, twelve students (40%) got a good category, eleven students (36.7%) got a fair category which is the passing standard score of the school, and only four students (13.3%) got a poor category.

Table 2 indicates the result of the control group. There are still many students who got under passing standard scores. There were fifteen students (50%) who received a poor category, one student (3.3%) received a very poor category, ten students (33.3%) received a fair category, three students (10%) received a good category, and one student (3.3%) received a very good category on the control group post-test. There was a slight increase in the control group, but many students still received the poor category. After classifying the students' results, data were collected for experimental and control groups as normality tests using Kolmogorov-Smirnov. The data was normally distributed if the significance value > 0.05.

Table 3. Test of Normality

	Class	Kolmogorov-Smirnov[a]		
		Statistic	Df	Sig.
Students Learning Outcomes	Pre-test Experimental group	.125	30	.200*
	Post-test Experimental group	.146	30	.102
	Pre-test Control group	.130	30	.200*
	Post-test Control group	.156	30	.061

Table 3 shows that the significant values of data on each student's learning outcomes (significance value) were greater than 0.05. It could be concluded that data was normally distributed. Next, the homogeneity of variance test was used to determine if the sample was homogeneity or not. If the significant value of the mean is more than 0.05, this sample is considered homogenous. The table below shows the homogeneity test results.

Table 4. Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Students Learning Outcomes	Based on Mean	1.817	1	58	.183
	Based on Median	1.461	1	58	.232
	Based on Median and with adjusted df	1.461	1	55.183	.232
	Based on trimmed mean	1.705	1	58	.197

As shown in Table 4, the homogeneity of the mean was 0.183. It means that the significance was greater than 0.05 (0.183 > 0.05) or it concluded that the data for both experimental and control groups were all the same. After calculating the normality and homogeneity tests, this study also revealed the overall mean score and standard deviation in the pre-test and post-test of both the experimental and control groups, providing a thorough comparison. The result is shown in Table 5 below.

Table 5. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test Experimental group	48.44	30	12.79715	2.33643
	Post-test Experimental group	77.22	30	10.68860	1.95146
Pair 2	Pre-test Control group	49.11	30	15.38732	2.80933
	Post-test Control group	65.89	30	13.77676	2.51528

As shown in Table 5, the mean pre-test score for the experimental group was 48.44, whereas the mean post-test score was 77.22. The mean score for the pre-test on the control group was 49.11, and the post-test on the control group was 65.89. It implies that the mean score on the post-test for both the experimental and control groups was higher than on the pre-test. It means, there has been significant improvement in students' reading comprehension after receiving treatment using the PBL method assisted with story mapping.

Table 6. Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Students Learning Outcomes	Equal variances assumed	1.817	.183	3.560	58	.001	11.33333	3.18353	4.96081	17.70586
	Equal variances not assumed			3.560	54.627	.001	11.33333	3.18353	4.95242	17.71424

By using statistical analysis with a 0.05 level of significance with the degree of freedom (58), the researcher found the sig. (2-tailed) value was smaller than 0.05 or 0.001 < 0.05. It reveals that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. The implementation of the PBL methods assisted with story mapping resulting a significant change in the way students' reading comprehension. In other words, problem-based learning methods assisted with story mapping can improve the reading comprehension of the eighth-grade students of SMP Negeri 4 Palu.

Discussion

Based on the result of the students' pre-test, most students have low reading ability. When the students read the text, they did not understand the meaning and were unfamiliar with the content because of a lack the vocabulary. Therefore, it was difficult for students to answer the pre-test. Then, the researcher gave treatment to the students in the experimental group. In the first meeting, the researcher introduced the narrative text and the social function of the text. Some students did not unfamiliar with the narrative text, but they still had difficulty determining the events of the narrative story. The students was given a problem for discussion related to the narrative material.

According to Mahmuda (2023), besides solving the problem, using PBL with story mapping can also train student collaboration. It is proved that many students are afraid to respond in class individually, but they are more willing to provide their ideas in a group. Using story mapping also helped students understanding the main idea of narrative texts, including the characters, places, and storylines of the stories, as well as how the stories end. Students were able to solve problems given in a group discussion and assisted with story mapping. After discussing and resolving the problem as a group, the student representative in the group made a presentation in front of the class from the results of the problem resolution that the students had discussed. After presenting the results of the problem resolution, the student answered the question given by the

researcher. From those questions, it could be seen that students were able to answer well because they had previously solved problems assisted with story maps.

Using PBL methods assisted with story maps made the class atmosphere more active because each group discussed the given problems. Nevertheless, there are some individuals had internal problems that make it hard for them to interact with their groups. However, this is not a big problem because from the results of the post-test, almost all of the students got higher scores than the pre-test. The post-test results revealed that although some students' answers were still incorrect, the majority of students could answer every question and understood the meaning of the questions. Previous research by Setyaningrum et al. (2023), which showed that the problem-based learning method was successful in improving students' reading comprehension, lines up with the findings of this study. The mean score result indicates that the experimental groups' pre-test and post-test scores significantly changed after they received treatment with a problem-based learning method assisted with story mapping. This is demonstrated by comparing the pre-test and post-test score increases in both groups which the group receiving treatment had a higher score increase than the control group.

Conclusion

After doing a thorough analysis of data, the researcher is able to definitively conclude that the use of problem-based learning method assisted with story mapping can improve the reading comprehension of the eighth-grade students of SMP Negeri 4 Palu. This finding is supported by the considerable variations in mean scores between the experimental group post-test (77.22) and the control group post-test (65.89). Moreover, the t-test findings showed that the sig. (2-tailed) value is lower than the chosen alpha level = 0.001<0.05. Consequently, the alternative hypothesis (H_a) was accepted and the null hypothesis (H_0) was rejected.

Additionally, the use of problem-based learning methods assisted with story mapping can train students' thinking and collaborative skills, thus making them more actively participate in the discussion and engage in critical and creative thinking. However, it return to each school because the students in each school have different abilities.

Acknowledgment

The researcher would like to express the deepest appreciation to her supervisor, co-supervisor, and reviewer; Dr. Hj. Sriati Usman, M.Hum., Wahyudin, S.Pd., M.Pd., and Dr. Rofiqoh, M.Ed. for the suggestions, corrections, and great feedback for the improvement of this research. The researcher also would like to express her gratitude to her beloved parents and siblings for their love, support, prayer, and care given to her until the completion of this research. Also, thanks to her students; class VIII Tombolotutu and VIII ST. Hasanuddin for the contribution during the research process. Lastly, big thanks to her friends who have fought and had a hard time together until the completion of the research.

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