THE EFFECTIVENESS OF PROBLEM BASED LEARNING ASSISTED WITH DIORAMA MEDIA TOWARDS LEARNING RESULTS OF SCIENCE MATERIALS RELATIONSHIP BETWEEN LIVING THINGS IN ECOSYSTEMS IN CLASS V STUDENTS OF MI ARROSYAD BERGASLOR

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Abstract

This study aims to determine the effectiveness of the use of problem based learning with the aid of diorama media on science learning outcomes regarding the relationship between living things in ecosystems in class V MI Arrosyad Bergaslor Semarang Regency in the 2021/2022 academic year.

This research is a quantitative pre-experimental research with One Group Pretest-Posttest design. The sampling technique was carried out by purposive sampling technique. Data was collected by means of tests, observations, and documentation. The test instrument was tested using validity test, reliability test, difficulty level test and test of differentiating power of questions. The data analysis technique used is the Paired Sample T Test.

The results showed that the science learning outcomes of the fifth grade students of Al Basith obtained an average pretest score of 62.40 and posttest of 82.77. Based on these data, student learning outcomes have increased by 20.37. This is evidenced by the Paired Sample T Test, the value (t_{count} 11,598 > t_{table} 2.048) and the significance value (P_{value} 0.000 < 0.05), based on these data, it can be concluded that Ho is rejected and Ha is accepted, meaning that the use of problem based learning assisted by diorama media is effective on science learning outcomes for the material on the relationship between living things in the ecosystem in class V MI Arrosyad Bergas Lor Semarang Regency in the 2021/2022 academic year.

Keywords: *Effectiveness, Problem Based Learning, Diorama Media, Learning Outcomes*

Introduction

Science lessons are one of the mandatory subjects included in the primary and secondary education curriculum. Science lessons can train students' critical and objective thinking opportunities. This science lesson is expected to be a facility for a student to be able to learn about themselves and the natural surroundings so that students can apply what they learn in everyday life (Nuraini, 2017). The teacher is one of the important factors in the provision of learning outcomes. Teachers are expected to become facilitators with scientific guidelines so that students can understand science learning correctly so that learning outcomes are maximized. Learning outcomes are changes in the behavior of someone who has followed a learning process with cognitive indicators, affective indicators,

Based on the results of information and observations at MI Arrosyad Bergaslor, especially in class V, it was found that learning in this new normal era almost all subjects including science lessons still use conventional methods, namely lecture, question and answer, and discussion methods. Learning with this conventional method at MI Arrosyad Bergaslor has not fully made students active, communicative and independent. When the

learning process takes place, students are less concentrated, causing the learning process not to run conducive, besides the lack of motivation from within students to follow the learning process so that it affects student learning outcomes. Apart from the use of methods, the use of learning media has not been used optimally.

From some of the problems faced today, we need a model and learning media that can be used as an improvement and can also improve student learning outcomes. One alternative learning to overcome these problems is the application of problem-based learning or also called problem-based learning and also the use of diorama learning media. Problem based learning learning model is a learning model to solve a problem with high critical thinking skills. The problem used in this learning model is a real problem so that by applying this model it is hoped that students will be able to solve problems that occur in everyday life (Anastasia et al, 2018). Diorama media is a learning media as a picture of an event that is presented in a mini form that contains information (Sutjipto, 2013).

Previous research conducted by Maulida (2020), Ma'aruf, et al (2017), Nita (2017) stated that problem based learning models improve student learning outcomes and critical thinking skills so that problem based learning models are effectively used in learning activities. Based on previous studies, it is necessary to conduct research to determine the effectiveness of the use of problem based learning models assisted by diorama media on science learning outcomes regarding the relationship between living things in the ecosystem.

Method

This research is a pre-experimental research with a research design that is One-group pretest-posttest design. This research was carried out at MI Arrosyad Bergaslor in March of the 2021/2022 academic year. The research design can be seen in Table 1.

Table 1. Research Design

Group	Pre-test	Treatment	Post-test
Experiment	O_1	X	O_2

Information:
O_1 : Score*pretest* (Before being treated)
O_2 : Score*posttest* (After being treated)
X   : Treatment in the experimental group with learning using the model*problem based learning*with the help of diorama media.

The population in this study were all fifth grade students at MI Arrosyad Bergaslor for the academic year 2021/2022. The sampling technique was carried out by purposive sampling technique, the research sample used was class V Al Basith, totaling 30 students. The instrument used is a test question which consists of 22 questions in the form of multiple choice questions. The test questions were tested for validity, reliability, discriminatory power and level of difficulty with the IBM SPSS Version 25. The results of the data were tested for prerequisites, namely normality and homogeneity tests, then hypothesis testing with paired sample t test. The criteria for testing the hypothesis are as follows:

1. If the significance value is < 0.05, then it is rejected and the research hypothesis is accepted, meaning that the use of Problem Based Learning models assisted by

diorama media is effective on science learning outcomes regarding the relationship between living things in ecosystems in class V MI Arrosyad Bergaslor

2. If the significance value is > 0.05, then it is accepted and the research hypothesis is rejected, meaning that the use of the Problem Based Learning model with the aid of diorama media is not effective on science learning outcomes regarding the relationship between living things in ecosystems in class V MI Arrosyad Bergaslor

Results and discussion

Learning material on the relationship between creatures in the ecosystem with a problem-based learning model assisted by diorama media was carried out four times, presented in Table 2.

Table 2. Learning Implementation Activities

The Meeting	Time	Activity
1	March 23, 2022	*Pretest*
2	March 24, 2022	Implementation of RPP 1
3	March 25, 2022	Implementation of RPP 2
4	March 26, 2022	*Posttest*

The test of students' cognitive learning outcomes was analyzed using gain to see the difference between the posttest and prettest scores, then to determine the increase, the Ngain formula and requirements analysis test were used. The average value of pretest, posttest, gain, and N-gain can be seen in Table 3.

Table 3. Average values of pretest, posttest, gain, and N-gain

Data source	N	Average				Category
		pretest	*posttest*	*gain*	*N-gain*	
THB	30	62.40	82.77	20.37	0.52	Currently

Normality test using IBM SPSS Statistical Version 25 Shapiro Wilk with test criteria if the significance > 0.05 then the data is normally distributed, whereas if the significance is < 0.05 then the data is not normally distributed. The results of the normality test in class V Al Basith can be seen in Table 4.

Table 4. Normality Test Results

Data source	sig*	Information
Pretest	0.69	Normal
Posttest	0.60	Normal

Homogeneity test using IBM SPSS Statistics Version 25 Levene test with test criteria if the significance value > 0.05 then the data is said to be homogeneous. The results of the homogeneity test in class V Al Basith can be seen in Table 5.

Table 5. Homogeneity Test Results

Data source	sig*	Information
Study Results Test	0.123	Homogeneous

After the data obtained from student learning outcomes are normally distributed and homogeneous, the hypothesis is tested using the Paired Sample T Test with test criteria if the significance value is > 0.05 then Ho is accepted and Ha is rejected, whereas if the significance is < 0.05 then Ha is accepted and Ho is rejected. The results of hypothesis testing can be seen in table 6.

Table 6. Hypothesis Test Results

Calculation of Study Results	sig*	Information
Paired Sample T Test	0.000	Effective

Student learning outcomes through pretest and posttest using problem-based learning models assisted by diorama media which were analyzed first with the N-Gain Test and these results showed an average N-Gain value of 0.5219 with medium category. In the normality test using Shapiro-Wilk, the Sig value was obtained. pretest and posttest of (0.69 and 0.60) > 0.05, it can be concluded that the pretest and posttest learning outcomes in the experimental class were normally distributed, while the homogeneity test obtained the Sig value. 0.123 > 0.05 then the data from the pretest and posttest scores are homogeneous.

Based on the analysis of hypothesis testing using the Paired Sample T Test, the results obtained (t_{count} 11,598 > t_{table} 2.048) and (P_{value} 0.000 < 0.05), so it can be concluded that H_o is rejected and H_a is accepted, meaning that the use of problem based learning models assisted by diorama media is effective on science learning outcomes for the material on the relationship between living things in the ecosystem in class V MI Arrosyad Bergaslor Semarang Regency in the 2021/2022 academic year. This is supported by the acquisition of an average pretest score of 62.40 in the medium category and the average posttest score after learning with a problem based learning model assisted by diorama media is 82.77 with a high category.

Based on the results of research and data analysis that has been carried out, it can be concluded that the use of problem based learning models with the aid of diorama media is effective on science learning outcomes regarding the relationship between living things in ecosystems in class V MI Arrosyad Bergaslor Semarang Regency in the 2021/2022 school year.

Conclusion

Based on the results of data analysis and discussion, it can be concluded that: Based on the statistical test Paired Sample T Test obtained (t_{count} 11.598 > t_{table} 2.048) and (P_{value} 0.000 < 0.05), so it can be concluded that H_o is rejected and H_a is accepted, meaning that the use of problem-based learning models assisted by diorama media is effective on science learning outcomes for material on the relationship between living things in ecosystems for fifth grade students of MI Arrosyad Bergas Lor, Semarang Regency in the 2021/ academic year. 2022.

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