

THE INFLUENCE OF THE NATURAL EXPLORING METHOD ON STUDENT LEARNING OUTCOMES IN CLASS IV SCIENCE SUBJECTS AT MUHAMMADIYAH 11 MEDAN PRIMARY SCHOOL

Enny Rahayu^{1*}
Melyani Sari Sitepu²
Anisa Rahmah³

^{*1, 2, 3, 4, 5}Universitas Muhammadiyah Sumatera Utara

^{*1}*email:* ennyrahayu@umsu.ac.id

Abstract: This research is motivated by the low learning outcomes of students in science subjects because teachers still use the lecture method. This research aims to determine the effect of the natural exploration method on student learning outcomes in science subjects. The method used in this research is a quasi-experimental research method with a quantitative approach. Based on the results of the data analysis carried out, it was found that the average learning outcome for control class students using conventional methods in the pre-test was 66.59 and the post-test was 77.27. And the average learning outcomes of experimental class students in the pre-test was 73.86 and the post-test was 82.05. This shows that the average result in the experimental class (after using the environmental exploration method) was higher than the control class (conventional method). Meanwhile, the researcher carried out the analysis by testing the hypothesis, namely using the t-test to determine each variables have an influence or not, namely variables X and Y. The analysis results obtained show that the method of exploring the surrounding nature has a significant value of 0.022. So it can be concluded that if the significance value is $0.022 < 0.05$, then H_a is accepted or there is an influence of the natural exploration method on student learning outcomes in science subjects.

Keywords: Exploring The Natural Environment, Learning Outcomes, Natural Science

Introduction

Education is an institution that provides training and teaching with applicable rules that have been determined and arranged systematically. Through education, the desires and hopes of someone who studies can be realized. Through education too, a person's behavior and attitudes can be seen after going through that level of education. . The progress of a nation is determined by the level of educational success (Gligorijevic et al., 2019) . With good learning provided, good quality will also be produced. And to determine quality is the final result of the learning provided. To get the final results, a teacher needs to carry out measurements, assessments and evaluations after the learning process (Rona, 2018) .

According to Law number 20 of 2003 concerning the National Education System article 1 paragraph 1, Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence , noble morals, and skills needed by himself, society, nation and state (Widyastono, 2012) . In realizing the goal of national education, namely forming the nation's next generation who will continue the development of Indonesia, a formal educational institution, namely a school, is needed (Kadarsih et al., 2020) . In article 14 it is explained that one

of the formal education pathways is basic education. Basic education is a level of education that includes secondary education.

Elementary School (SD) education is an example of formal education which has an important role, then when students enter elementary school education, then students are in the golden age phase. Thus, elementary school education must be implemented based on the objectives of elementary school education (Pendit et al., 2022) . According to Trianto, Natural Science Learning is a systematic collection of theories, the application of which is generally limited to natural phenomena, is born and develops through scientific methods such as observation and experimentation and teaches scientific attitudes such as curiosity, openness, honesty and so on. Various theories are used to explain a phenomenon, and then predict events that will occur (Wandini et al., 2022) . It is further stated that there are three abilities in Natural Sciences, namely: 1) The ability to know what is observed; 2) the ability to predict what has not been observed and the ability to test follow-up to experimental results and; 3) develop a scientific attitude (Anny Sulastri, Sugiyono, 2019) . According to Mallinson, Bundu has two main goals for science learning, namely developing the dimensions of student knowledge and developing the dimensions of student performance (Sulthon, 2017) .

Before conducting research for data, researchers had previously carried out PLP 2 at SD Muhammadiyah 11 Medan. Based on the results of observations made by researchers at SD Muhammadiyah 11 Medan, teachers tend to conduct learning in a teacher-centered manner (satisfied with the teacher). Currently, the implementation of science learning at SD Muhammadiyah 11 Medan is still dominated by classroom conditions that are still focused on the teacher as the main source of knowledge. Lectures are still teachers' main choice in teaching, while scientific processes are not commonly developed in the learning process. Student activity in teaching and learning activities is still lacking, students only receive knowledge that comes from the teacher. Students still carry out very few activities that involve thinking skills and abilities, when implementing lessons the teacher enters the class to provide material through lectures which sometimes use the help of power point media. This monotonous learning process causes students to become passive, unmotivated and student learning outcomes in science subjects are low. As a result, student learning achievement is not optimal, daily test scores often do not reach the KKM score.

The learning process at school is a very important aspect in determining student success. The learning process that adheres to PAIKEM principles (Active, Innovative, Creative and Fun Learning) is currently a principle that teachers must understand and implement in their classrooms (Fatmah et al., 2016) . The rapid progress of science in the world today will also influence students' views of material or lessons. Teachers must immediately respond to these changes by providing material in innovative ways. One alternative learning that can be done is to use the Exploring the Natural Environment (JAS) learning method.

The Exploring the Environment learning method is an innovative approach to learning biology and also for the study of other sciences which is characterized by using the surrounding environment and its simulations as a learning resource through scientific work, and is followed by student-centred learning implementation. The characteristics of learning activities using a natural exploration approach include forecasting, observation and explanation activities (Ismartoyo & Indriasih, 2013)

The application of Exploring the Environment can be useful for exploring students' understanding of a concept and the relationship between biological concepts, and students will gain direct experience in learning. JAS can open up diverse thinking perspectives, students can also learn various concepts and how to relate them to real life problems (AA Ahmad Hakim Roja, 2019) . Direct experience allows students to better understand the problems they are studying so that the learning outcomes they want to achieve can be realized (Sari et al., 2012) . Research

conducted by Fadlia shows that making a learning journal using the JAS approach has a good effect on learning outcomes in the cognitive, affective and psychomotor domains (Ahmadi, 2021) .

Literature Review

After the researcher read and studied several previous scientific works, the research was relevant to the research carried out by:

Benyamin Salu (2016) "Application of the Environmental Exploration Method (Jas) to Increase Motivation and Value of Class VI Student Learning Results Sdn No 214 Kalumpang 2016" Based on the results of research and discussion, the conclusion can be drawn that: Application of the Exploration learning approach The Natural Environment (JAS) can increase student motivation in learning science so that students are able to independently build a concept map about ecosystem balance. Student motivation in the high and very high categories before learning JAS KITA was 38.46% and after learning it was 80.77%.

Ahmad Hakim Roja A.A (2019) "Application of the YouTube-Based Environmental Exploration Approach (JAS) to Increase Students' Scientific Literacy at SMAN 1 Sumber" Student learning activities during the lesson have experienced a very good increase, this is indicated by the graph rate which continues to increase during the learning which is divided into 3 (three) meetings. Apart from the increase based on 30 meetings in class, each stage (syntax) given to experimental class students had an average activity level of 88.06% which was included in the "Very Good" category. The difference in increasing scientific literacy between the experimental class and the control class is very clearly visible based on the results of the pretest and posttest carried out.

The relevance of previous research to the research that will be carried out is both regarding exploring the natural environment (JAS) in classroom learning. Meanwhile, the difference between previous research and the research to be conducted lies in the material, subject and type of research used and the school used as the research location.

Method

The method used in this research is a quasi-experimental research method with a quantitative approach. In this research, there were two groups of research subjects, namely the experimental group using the Environmental Exploration (JAS) approach and the control group using conventional learning.

This research was at SD Muhammadiyah 11 Medan Barat Jl. Sekata No. 5, Sei Agul, Kec. District West Medan Class IV. The population in this study was class IV students totaling 64 students who were divided into 3 classes. Sampling was carried out using purposive sampling technique. The sample in this study was class IV-B as the experimental class and class VII-A as the control class. The variables that will be examined in this research are Variable X and variable Y. Meanwhile, the data collection technique that will be used in this research is the test. The type of test used in this research is one of the objective tests in the form of a multiple choice test. The test questions given here are Pre-test (initial test) and Post-test (final test). This research design is presented in the following table:

Table 1 : Experimental class and control class groups

Group	Initial test	Treatment	Post test
Test	O ₁	X	O ₂
Control	O ₃		O ₄

To obtain the data in this research, the researcher used the following tools/instruments:

Validity test

According to Arikunto in (Agustian et al., 2019) validity is the degree of certainty between the data that occurs on the research object and the power that can be reported by the research. To test the validity of each instrument item, you need to correlate the scores of each item with the total score of the instrument. The significance level is 5% ($\alpha = 0.05$), this validity test is said to be valid if $r_{\text{calculated}} > r_{\text{table}}$. This validity test uses SPSS version 25.0 *for Windows*.

Reliability test

In reliability testing, the instrument often used is the Alpha formula. To measure the level of test reliability, Cronbach's Alpha calculation can be used with a significance level of 5% ($\alpha = 0.05$), if $\alpha > r_{\text{table}}$ then the question item is in the reliable category. This reliability testing uses the SPSS version 25.0 *for Windows application*.

The data analysis techniques in this research are using the normality test, homogeneity test and hypothesis test.

Normality test

Testing for normality can be done using the Kolmogorov Smirnov test. The basis for the decision in the normality test is that if the significance value is > 0.05 then the research data is normally distributed. The normality test uses the SPSS version 25.0 *for Windows application*.

Homogeneity Test

Homogeneity test is a statistical test procedure intended to show that two or more groups of sample data come from populations that have the same variance. The test criteria are if the significance value is > 0.05 then it can be said that the variants of two or more groups of data are the same (Guarango, 2022) . This homogeneity test uses the SPSS version 25.0 *for Windows application*.

Hypothesis testing

A hypothesis is a temporary answer to a formulated problem, so its truth must be tested empirically (Artha & Intan, 2021) . Hypothesis testing is carried out to find out or prove whether the truth is acceptable or not. By carrying out a hypothesis test, it can be seen whether there is an influence between the experimental class and the control class. The hypothesis test in this research is the Partial Hypothesis Test (t Test).

The basis for drawing conclusions from the t test results can be seen:

- 1) If the t value $> t_{\text{table}}$ and/or Sig value < 0.05 then the method of exploring the natural environment can influence student learning outcomes.
- 2) If the t value $< t_{\text{table}}$ and/or Sig value > 0.05 then the method of exploring the natural environment has no effect on student learning outcomes.

Result and Discussion

RESULTS

Data collection was carried out using test sheets. The data obtained in this research was taken from the results of the pre-test and post-test of students who were tested in class. Before conducting the research, the researcher had first tested the validity of the instrument and its

reliability, which was tested at SD Muhammadiyah 11 Medan on class IV students. After that, proceed with normality tests, homogeneity and then hypothesis testing.

Validity test

The validity test is calculated by comparing the r_{count} (Corrected item-total correlation) with the r_{table} value. If $r_{\text{count}} > r_{\text{table}}$ and the value obtained is positive then the item for each question is declared valid. By using 22 respondents, the r_{table} value can be obtained from the Pearson product moment r_{table} with df (degrees of freedom) = $N-2$, then $df = 22-2 = 20$. So the r_{table} value is 0.423. The instrument is said to be valid if $r_{\text{count}} > r_{\text{table}}$, the r_{table} value for this instrument is 0.423. Based on the results of the validity test, 21 of the 30 questions were declared valid because the r_{count} was > 0.423 .

Reliability Test

The results of testing the reliability of the variables used in this research obtained an alpha value of > 0.05 . The results of the reliability test on the student learning outcomes instrument obtained an alpha of 0.767. Based on the coefficient values obtained in this research, it is stated that these variables are reliable.

Table 2 : of Statistical Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N Items
,767	21

Before carrying out a hypothesis test, a normality test and homogeneity test are first carried out with the aim of seeing whether the data obtained is normally distributed and homogeneous or not.

Below is presented the data from the normality test and homogeneity test using SPSS 25.0 for Windows.

Normality test

The normality test results that have been obtained are as follows:

Table 3 : Normality Test Results

Normality Test							
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	class	Statistics	df	signature.	Statistics	df	signature.
student learning outcomes	pre-test experiment	,169	22	,100	,915	22	,060
	pre-test control	,180	22	,063	,935	22	,152

A. Lilliefors Significance Correction

Based on the output results of the normality test " Kolmogorov-Smirov Normality Test", it can be seen that the significant value (sig) of the student learning outcome variable using the JAS (Environmental Exploration) method is 0.100 and the conventional method is 0.630. Meanwhile, in the normality test "Shapiro-Wilk Normality Test " the significance value (sig) can be seen. the JAS method is 0.060 and the conventional method is 0.152. Because the sig α value is > 0.05 , it can be concluded that the experimental and control class data variants are normally distributed.

Homogeneity Test

The results of the homogeneity test that have been carried out are as follows:

Table 4 : Homogeneity Test Results

Homogeneity of Variance Test					
		Levene Statistics	df1	df2	signature.
student learning outcomes	Based on Average	,003	1	42	,959
	Based on Median	,000	1	42	1,000
	Based on Median and with adjusted df	,000	1	41,364	1,000
	Based on trimmed mean	,006	1	42	,939

Based on the output table for the results of the homogeneity test " Test of Homogeneity of Variances " it can be seen that the significance value (sig 0. The learning outcome variable for students in the experimental class (surrounding exploration method) and the control class (conventional method) is 0.959. Because the sig. 0.959 > α 0.05, so it can be concluded that the variance of the JAS (surrounding natural environment) and conventional class data is the same or homogeneous.

Based on the results of the reflection test, it can be concluded that the data is normal and has the same variance (homogeneity). So next, research hypothesis testing will be carried out with the help of SPSS 25.0 for Windows.

Hypothesis test

This hypothesis test is used to determine the influence of the method of exploring the natural environment on student learning outcomes, namely by using the t-test. To test the "t-test" the SPSS program version 25.0 for Windows was assisted. The results of the t-test can be seen in the table below:

Table 5 : Final t-test (Posttest)

Independent Sample Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	signature.	Q	df	signature. (2-tail)	Meaningful Differences	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	On
student learning	Equal variances are assumed	,076	,785	2,373	42	,022	4,773	2,012	,713	8,832

outcomes	Equal variances are not assumed			2,373	41,872	,022	4,773	2,012	,713	8,832
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Based on the table above, the sig value is obtained. (2 tailed) of $0.022 < 0.05$. Looking at the significant value of these two variables, namely $0.022 \leq 0.05$, it can be concluded that the variable (X) method of exploring the surrounding nature has an influence on the variable (Y) student learning outcomes. Because in taking the t-test decision analysis if the significant value is ≤ 0.05 then there is an influence. Based on the t-test guidelines, it can be concluded that there is a significant influence between the method of exploring the surrounding nature on student learning outcomes.

DISCUSSION

Based on the results of the data analysis carried out, the average learning outcomes of control class and experimental class students before using the natural exploration method were obtained, namely: the control class got an average score of 66.59 and the experimental class 73.86. After using the natural exploration method in these two classes, it turned out that the two classes got an increase in scores, where the average score for the control class was 77.27 and the average score for the experimental class was 82.05. This shows that the average results in the experimental class are higher than those in the control class. So it can be concluded that after exploring the natural environment the student learning outcomes in science subjects are better than conventional methods .

The analysis carried out by the researcher tested the hypothesis, namely using t tests to determine whether each variable had an influence or not, namely variables X and Y. The results of the analysis obtained showed that the method of exploring the surrounding nature had a significant value of 0.022. So it can be concluded that if the significance value is $0.022 < 0.05$, then H_a is accepted or there is an influence of the natural exploration method on student learning outcomes in science subjects.

The Environmental Exploration method can be useful for exploring students' understanding of a concept and the relationship between biological concepts, and students will gain direct experience in learning. The JAS learning method invites students to think globally, regarding the importance of the environment, working and learning based on the surrounding environment provides added value, both for the learner himself and for the surrounding environment (Zubaidah, 2021) . This method is expected to make it easier for students to write by observing real objects (Raharjo, 2012) . Direct experience allows students to better understand the problems they are studying so that the learning outcomes they want to achieve can be realized (Sari et al., 2012) . Learning outcomes are things that can be seen from two sides, namely the student's side and the teacher's side (Sulastri et al., 2014) .

This is shown in research conducted by Nengsiati (2020) with the title "The Influence of the Environmental Exploration Method (JAS) on the Learning Outcomes of Class V Students in Mathematics Subjects at SDN 114 Rejang Lebong" there is an influence of the environmental exploration method on student learning outcomes in implementation of learning. The results obtained by Nengsiati were positive responses from all parties, based on research results, the average learning outcomes for students who used the natural exploration method were 24.5 with "good" criteria. (Nengsiati, 2020).

Conclusion

Based on the research data and data processing obtained, the following conclusions can be drawn:

Based on the results of the data analysis carried out, the average learning outcomes of control class and experimental class students before using the natural exploration method were obtained, namely: the control class got an average score of 66.59 and the experimental class 73.86. After using the natural exploration method in these two classes, it turned out that the two classes got an increase in scores, where the average score for the control class was 77.27 and the average score for the experimental class was 82.05. This shows that the average results in the experimental class are higher than those in the control class. So it can be concluded that after exploring the natural environment the student learning outcomes in science subjects are better than conventional methods .

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