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The Influence of The Problem Based Learning Model on Learning Outcomes of Class V Students in Science Learning at UPTD SDN 125543 Pematang Siantar T.A 2023/2024

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ABSTRACT

This research aims to determine whether there is an influence of the *problem based learning model* on the learning outcomes of class V students in science learning at UPTD SD Negeri 125543 Pematang Siantar FY 2023/2024, the method in this research is a quantitative experimental type method whose research design is pre-experimental. one group pretest-posttest type. Conducted in September 2023, the population of all students at UPTD SD Negeri 125543 Pematang Siantar and a sample of 22 students consisting of 14 female students and 8 male students were used, namely two research variables: the dependent variable (x) the influence of the learning model problem based learning (y) student learning outcomes , the concept of learning is a result of achievement in teaching and learning activities which is achieved through a learning process which can be measured by the student's achievement or ability to achieve. Data collection techniques are test techniques with validity tests, reliability tests, difficulty level tests, and distinguishing power tests. The test results using the N-gain technique with the help of the SPSS version 21 program, based on the calculation results obtained a mean of 0.5588, with an effectiveness of 0.7>0.5588>0.3 which is in the medium category, in the ANOVA test the significance value was 0.002, which is where category 0.002<0.05 then HO $_{is}$ rejected Ha is accepted. This means that all independent variables have a significant influence on learning outcomes and have a significant influence on the dependent variable. So it can be concluded that there is an influence of the problem based learning model on the learning outcomes of class V students at UPTD SD Negeri 125543 Pematang Siantar T.A 2023/2024.

INTRODUCTION

In increasing learning intentions and also improving the quality of learning outcomes, many learning innovations are applied in the learning process, namely, the use of models, strategies, various learning methods, and interesting learning media. Educational development has the potential to increase understanding and also improve character development so that the implementation and development of education can be well directed for the future. Learning is also a process of exploring knowledge and insight through various activities carried out to increase and also acquire skills, abilities and knowledge. Learning outcomes have an important role in the teaching and learning process. Learning outcomes are targets of the teaching and learning process that are expected to be achieved.

Looking at the completion of the daily test results of class V students in science learning at Uptd SD Negeri 125543, there were 8 students who completed it and there were 14 students who did not reach the KKM. Therefore, researchers hope to be able to apply the problem based learning model to see the extent of students' abilities with the application of this learning model.

Outcomes are changes in a person's behavior that can be observed and measured. Learning outcomes obtained by students after going through a series of learning can produce changes, namely changes in spirituality, knowledge, attitudes and skills according to Afandi, quoted by Marwah (2021 : 43).

The Problem Based Learning (PBL) learning model acts as a learning model that involves students in solving problems through several stages of the scientific method, so that students are expected to be able to learn knowledge related to problems and involve skills in solving problems according to Kamdi quoted by Yuafian (2020 : 18) .

The Problem Based Learning (PBL) model, it is a model that uses problems as learning to hone thinking skills directly. In the problem-based learning model , problems are presented to be solved by providing challenges for students to solve and finding solutions to problems given by educators. This is different from conventional learning (lecture method) where the teacher focuses on learning without involving students in the learning process. Through the application of the problem based learning model, it is hoped that students will be able to improve their learning achievements so that learning outcomes increase and students can develop achievements in solving the problems they face.

THEORETICAL FRAMEWORK

The conceptual framework is a part of the research that provides an overview of the research flow, so that the research becomes clear. So it can be said that the conceptual framework is the Influence of the *Problem Based* Learning Model on the Learning Outcomes of Class V Students at Uptd Sed Negeri 125543 Pematang Siantar FY 2023/2024.

By using a pretest, where a pretest is a test given before learning is given or explained, then a *problem based learning model is applied* , which relates subjects to the students' real daily lives, after the learning process is carried out, then analyzing the data through the information provided have been obtained while conducting research to obtain results from the research. So that it can create results from the influence of the problem based learning model on learning outcomes.

METHODS

The research used is quantitative research. With this type of *Pre-Experimental* research as a research method that can be used to find the effect of treatment on others under controlled conditions (Sugiyono 72:2018).

$O_1 X O_2$

Figure 1. One-Group Pretest-Posttest Design

Information:

0_1 : Initial test (*Pre-test)* before treatment is given

0_2 : Final Test (*Post-test)* after the treatment is given

X: Treatment by applying learning using a model

Problem Based Learning (PBL)

The population is the entire subject to be measured, which is the unit being studied. So the population in this study was all class V students at UPTD SD Negeri 125543 Pematang Siantar.

A sample is a representative part of the population, taken using certain techniques. The sampling method in this research is *non-probability sampling* to provide opportunities for members of the population to be selected as samples. Therefore, the sample in this study was all class V students of UPTD SD Negeri 125543 Pematang Siantar, totaling 14 girls and 8 boys. In data analysis, the N-gain test and anova test were used.

RESULTS AND DISCUSSION

Results

Researchers conducted initial research by testing instruments at SD Negeri 091277 Siantar Estate which is located at Jl Makmur, Kec. Siantar-Regency. Simalungun. This school is led by a principal named Salina Majid Saragih, S.Pd. This school uses the 2013 curriculum as a reference or learning design used in teaching and learning activities. This research was carried out in class V with 25 students as respondents. This research was conducted for 35 minutes with 30 multiple choice questions. After completing the instrument test, the researcher continued by entering the data into Excel to obtain valid and invalid question data.

Test instrument

1.Test validity

The validity test is carried out by calculating r_{xy} using the *Product Moment correlation formula* using Ms.Excel 2010. If $r_{xy} > r_{table}$ at 5% significance with N= 25, then the instrument is declared valid for measuring learning outcomes, but vice versa if $r_{xy} > r_{table}$ then the instrument is declared invalid and not suitable for use to measure learning outcomes.

2. Reliability Test

The reliability test was carried out by calculating r_{11} using ***Kuder-Richardson* 20** (*K-R20*) Ms. Excel 2010. If $r_{11} > r_{table}$ at the 5% sinification level with N= 22 then the instrument is declared reliable for use in measuring learning outcomes, but conversely if $r_{11} < r_{table}$ then the learning outcomes instrument is not suitable for use.

3. Difficulty Level Test

The difficulty level test is carried out by calculating the difficulty index using the formula P = $\frac{B}{N}$with the help of Ms.Excel 2010. If the difficulty index is 0.00-0.24 then the interpretation is. The difficulty index of the questions is stated as difficult. If the difficulty index for the question is 0.25-0.75, then the interpretation of the difficulty index is 0.76-1.00, then the interpretation of the difficulty index for the question is declared easy.

4. Differentiating Power Test

The question discriminating power test is a test carried out by computing coefficients that distribute the scale score itself, which has a classification of question distinguishing power as very good, good and moderate.

Data analysis

1.Test N-gain

Based on this research, Descriptive Statistics was used to assess the influence of the problem based learning model on the learning outcomes of class V UPTD students at SD Negeri 125543 Pematang Siantar, which can be seen from the following table:

Table 4.2.1 N-Gain Test Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ngain_score	22	.10	.80	.5588	.15372
Valid N (listwise)	22				

(*Source* ; *2021 version of SPSS Statistics Management Results*)

Based on the table above, it can be seen that the value (mean) in the trial class shows that the effectiveness of student learning outcomes is 0.5588. It can be concluded that the effectiveness is 0.7>0.5588≥0.03, which means this result is in the medium category.

2.Anova test

In this study, *One Why Anova was used* to see the significance of differences between the averages of different groups in one or more respondent variables and the population using a *problem based learning model* on the learning outcomes of class V UPTD students at SD Negeri 125543 Pematang Siantar, which can be seen in the table below. .

Table 4.2.2 Anova test

ANOVA

Pretest

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	984,091	7	140,584	6,056	,002
Within Groups	325,000	14	23,214		
Total	1309.091	21			

(*Source ; 2021 version of SPSS Statistics Management Results*)

In the significance results of the anova test, it is 0.00, which means the significance value is 0.00 <0.05, so Ho $_{is}$ rejected and Ha $_{is}$ accepted, which means there is an influence of *the problem based learning model* on the learning outcomes of class V students at SD Negeri 125543 Pematang Siantar.

Discussion

Researchers conducted research at SD Negeri 091277 Siantar Estate which is located at Jl Makmur, Kec. Siantar-Regency. Simalungun. This school is led by a principal named Salina Majid Saragih, S.Pd. This school uses the 2013 curriculum as a reference or learning design used in teaching and learning activities. This research was carried out in class V with 25 students as respondents. Before conducting research, you must first test the instrument at another school, namely SD Negeri 091277 Siantar Estate to prove that the questions are suitable for use. This research was conducted for 35 minutes with 30 multiple choice questions. After completing the instrument test, the researcher continued by entering the data into Excel to obtain valid and invalid question data which would be tested on the UPTD research at SD Negeri 125543 Pematang Siantar.

Then the researcher conducted research at UPTD SD Negeri 125543 Pematang Siantar, the researcher carried out *a pretest before being given treatment on the problem based* learning model and a posttest was given after being given treatment at the research school. The pretest was given to determine students' initial abilities before being given treatment to the students at UPTD. After the pretest was carried out, the researcher then provided science learning material for Theme 2 Subtheme 2 (Respiratory Organs in Humans) using a problem based learning model. After the treatment was carried out, the researcher gave a posttest, namely the final *test* . to see students' abilities after being given the model.

Based on data that has been tested by researchers through the SPSS 21 test, it can be concluded that the average score of the 22 students in the pretest and posttest results is 53.63 and 79.54 based on the score data before and after the treatment has increased. After carrying out the descriptive test, the researcher also carried out a data analysis test, namely the N-gain test, seen from (Mean) 56.32, that the effectiveness was

0.7>5588>0.3, which results were included in the medium category. In the ANOVA test, the significance value is 0.00, where 0.00<0.05 means Ho is rejected and Ha is accepted, so there is an influence of *the problem based* learning model on the learning outcomes of class V students at UPTD SD Negeri 125543 Pematang Siantar.

Based on the presentation of the N-Gain test results, it can be concluded that the *problem based learning model* has a positive and significant effect on the learning outcomes of class V UPTD students at SD Negeri 125543 Pematang Siantar FY 2023/2024.

CONCLUSION & RECOMMENDATIONS

From the problem formulation and hypotheses proposed as well as the research results , the average student learning score before being given treatment (*pretest)* was 53.63 and the average score before being given treatment (*pretest) was 79.54, so it was concluded that the problem based learning* model had an influence on improving student learning outcomes in science subjects class V UPTD SD Negeri 125543 Pematang Siantar.

In the N-Gain Test, the effectiveness of the data obtained was 0.7>5588≥0.3, where the results were in the medium category. Next, an anova test is carried out using the specified criteria, as for the significance of F<0.05 then Ho is rejected and Ha is accepted if F>0.05 then Ho is accepted and Ha is rejected, from the significance of 0.00 it is said that F<0.03 (0.03<0.05). So Ho is rejected and Ha is accepted, meaning that all independent variables have a significant influence on the dependent variable. This explanation shows that there is an influence of the problem based learning model on the learning outcomes of class V UPTD students at SD Negeri 125543 Pematang Siantar.

FURTHER STUDY

So further lessons that can be given to make it better in the future are:

1. For Teachers
   Teachers can apply the problem based learning model in the learning process to improve student learning outcomes in each material.
2. For student
   To students so that they can always improve their learning outcomes.
3. For Schools
   Schools should pay more attention to the learning outcomes of each student in order to improve the quality of education, especially education at UPTD SD Negeri 125543 Pematang Siantar.
4. For Researchers
   Researchers are expected to be able to develop problem based learning models by applying other materials to find out whether other materials are suitable for implementing the *problem based learning model* .
5. For Other Researchers
   For researchers who want to apply the problem based learning model, they can further develop and strengthen this learning model so that this learning model can spread and teachers are interested in implementing the *problem based learning model.*

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