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STUDENT TEAM HEROIC LEADERSHIP TYPE LEARNING MODEL USING THE *PROBLEM POSING METHOD* ON STUDENTS' PHYSICS LEARNING OUTCOMES

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ABSTRACT

This research is based on the results of observations that have been conducted at SMA Islam Yaspia Bekasi Regency, the results of daily physics tests for the 2016-2017 academic year were very low. Because many students still lack understanding of the contents of the questions given and their ability to understand mathematical concepts is also still very lacking. The purpose of this study was to determine the effect of students' physics learning outcomes with the Student Taem Heroic Leadership Type learning model using the Problem Posing Method. The method used in this study is a quantitative method, namely Pre Experimental Design. The research process was carried out in 3 stages, namely pretest, treatment, and posttest. This study found that there was a significant influence on students' physics learning outcomes with the Student Taem Heroic Leadership Type learning model using the Problem Posing Method, this was obtained from the results of the calculation of $t_{count} = 3.37$ and $t_{table} = 1.690$ with a significance level of $\alpha = 0.05$, at a significance level of $\alpha = 0.01$, the results of $t_{count} = 3.37$ and $t_{table} = 2.444$ were obtained with a sample size (n) of 33 class X students.

Keywords: Learning Model, Physics, Learning Outcomes

INTRODUCTION

Creative thinking is one of the recommended ways. In that way, someone will be able to see the problem from many perspectives. Because, a creative thinker will produce more alternatives to solve a problem. To be able to solve a problem, someone must really know the problem so that they can find the right, effective and efficient decision [1] . Problem solving is one of the most important skills in life. Good problem solving is needed to face the challenges that often come in the learning process in the classroom [2] .

Regardless of the problem, efforts to prepare students to be able to face developments, one of which is through education because education can provide provisions in the form of basic abilities for students to face the development of the era. In accordance with the 2003 national education system, namely all components of education that are interrelated in an integrated manner to achieve national education goals. National education functions to develop abilities and form the character and civilization of a dignified nation in order to educate the life of the nation, aiming to develop the potential of students to become humans who believe and fear God Almighty, have noble morals, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens [3] .

In the 2013 curriculum section, there are 4 assessment aspects, namely knowledge and skills aspects. These two aspects are very important in physics learning because students are required to be able to solve problems presented by teachers using the knowledge and skills they already have to be applied to solving non-routine problems. Two other aspects that are no less important are the aspects of attitude and behavior [4] .

In general, problem-posing is related to the teacher's ability to motivate students through the formulation of challenging situations so that students can ask questions that can be solved and

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result in increasing their ability to solve problems. In implementing teaching and learning activities, teachers should choose a model that involves students actively in learning, both mentally, physically, and socially.

The existence of physics subjects in schools is expected that every student is able to develop knowledge and concepts of physics that can be applied in everyday life, so as to produce humans who have the ability and potential that can contribute to the progress of the nation and state. Physics is a subject that is inseparable from calculations and memorization of formulas because physics is always related to mathematics. The low ability of students to understand concepts is the main factor in the low results of learning physics, this is evidenced by the results of observations that have been carried out at SMA Islam Yaspia Bekasi Regency, the results of the daily physics test for the 2016-2017 academic year, even semester in April, where the minimum completeness criteria (KKM) value can only be achieved by 12 students out of a total of 33 students who took the exam or only around 36.4% with an average value of 65. Because many students still do not understand the contents of the questions given and the ability to understand concepts mathematically is also still very lacking. For that, an appropriate approach is needed to help teachers improve students' concepts.

In this era, many different models and learning methods have been created by education experts in order to achieve efficient and effective educational processes and goals [5] . However, not all learning methods can be applied according to the learning activities in the classroom that will be carried out, because generally each learning method has its own advantages and disadvantages. Therefore, in choosing an appropriate learning method, it is necessary to consider the characteristics of the material and teaching materials, student conditions, and facilities and infrastructure in a class.

The effectiveness of using learning models and methods is very important, because if seen from the reality by educational practitioners, the learning methods and methods applied by an educator greatly influence the quality of students. So learning models and methods are one of the factors or components of education that greatly determine the success or failure of learning objectives.

One of the effectiveness of using learning methods that can be done is using the problem posing method in the learning process. Problem posing is a learning method that requires students to compose their own questions or break down a problem into simpler questions that refer to the problem in solving the problem. In physics learning, problem posing occupies a model position. Students must master the material and the sequence of solving the problem in detail. This will be achieved if students enrich their knowledge not only from teachers, but also need to learn independently.

RESEARCH METHODS

The research method used is the Pre-Experimental Design method. The Pre-Experimental Design method is part of the quantitative method. The experimental method is widely used in the field of physics, because variables can be selected and other variables can affect the experimental process and can be controlled precisely [6] [7] .

The design in this study uses the Pre Experimental Design method with the form of One-Group Pretest-Posttest Design. In this design, observations were carried out twice, namely before the experiment and after the experiment.

This research was conducted at SMA Islam Yaspia Cibogo, Cibarusah, Bekasi Regency, West Java. The research was conducted in the 2016/2017 academic year in grade X of the even semester. This research was conducted from March to September. The total size of the

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research subjects observed was 33 students.

The research process was carried out in three stages, namely, *the pretest*, *treatment* and *posttest stages.* In each *pretest, students were given 10 descriptive questions on the material of temperature and heat. Students were given 120 minutes to work on the pretest* questions and then the data was processed after the *pretest* questions were completed by the students.

The next stage is *treatment*, at this stage students are given treatment in the form of using the *student team heroic leadership type model* using the *problem posing method* [8] . At the beginning of the previous meeting, students were informed in advance about the use of the student team heroic leadership learning model using the problem posing method so that students would not be confused in learning. Then in the next meeting, students form groups based on teacher instructions by dividing students into 4-5 groups where each group will be given problems in the form of questions which are made by other groups. Then each group answers the questions and representatives or leaders of each group are invited to present the results of the discussion of the answers to the questions [9] .

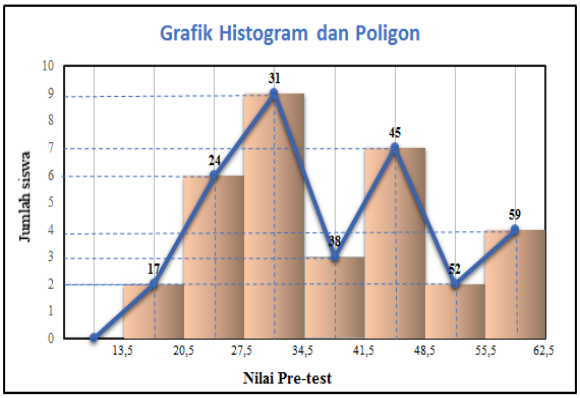
The final stage is *the posttest* , where students are again given 10 descriptive questions about temperature and heat after students receive treatment with the *student team heroic leadership learning model* using the problem posing method [10] . The posttest results will be used as data to see the effect of the assessment used on student learning outcomes before and after receiving treatment.

RESULTS AND DISCUSSION

From the pretest score data of students on the material of temperature and heat laws, the range of scores was obtained from 14 to 62 with a sample size of 33 students. It can be seen that the lowest score obtained by students was 14. and the highest score obtained by the students was 62. Based on the pretest data, it can be seen that the average score (mean) obtained was 37.15; the middle score (median) obtained was 31; and the value that often appears (mode) obtained was 29.6; and the standard deviation obtained was 85.31. The following table shows the frequency distribution of pretest scores.

No	Value interval	Kindergarten	BB	BA	Frequency	
					Absolute	Relatively(%)
1	14 – 20	17	13.5	20.5	2	6.06
2	21 – 27	24	20.5	27.5	6	18.18
3	28 – 34	31	27.5	34.5	9	27.27
4	35 – 41	38	34.5	38.5	3	9.09
5	42 – 48	45	41.5	48.5	7	21.21
6	49 – 55	52	48.5	55.5	2	6.06
7	56 – 62	59	55.5	62.5	4	12.12
Σ					33	100

Table 1. Frequency Distribution of Pretest Scores



Graph 1. Histogram and Polygon of Pretest Values

Based on Graph 1, it can be seen that the highest frequency is between 27.5 - 34.5 with a total of 9 students and has a relative frequency of 27.27%. This is because there has been no treatment so that the highest results achieved are still below the KKM, which is 75. While the lowest frequency is between 13.5 - 20.5 and 48.5 - 55.5 with a total of 2 people with a relative frequency of 6.06%. So it can be concluded that before the treatment of the Student Taem Heroic Leadership Type learning model using the Problem Posing Method, the results of the

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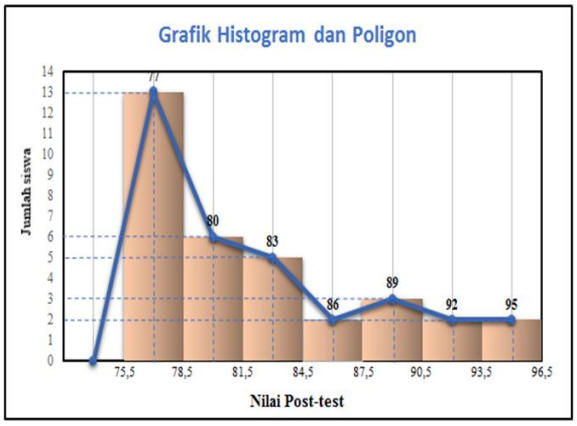
Pretest scores achieved by class X students of SMA Islam Yaspia, Bekasi Regency were still below the KKM, which was 75.

Based on the posttest value after the assessment process was implemented with the influence of the use of the student team heroic learning model using the problem posing method as seen from the pretest and posttest values in learning on the material of the law of temperature and heat, the range of values was 76 - 94 with a sample size of 33 students. It can be seen that the lowest value obtained by students is 76 and the highest value obtained by students is 94. Based on the posttest data, it can be seen that the average value (mean) obtained is 82.09; the middle value (median) obtained is 79.21; and the value that often appears (mode) obtained is 77.45; and the standard deviation obtained is 205.6. The following table shows the frequency distribution of posttest values.

No	Value interval	Kindergarten	BB	BA	Frequency	
					Absolute	Relatively(%)
1	76 – 78	77	75.5	78.5	13	39.39
2	79 – 81	80	78.5	81.5	6	18.18
3	82 – 84	83	81.5	84.5	5	15.15
4	85 – 87	86	84.5	87.5	2	6.06
5	88 – 90	89	87.5	90.5	3	9.09
6	91 – 93	92	90.5	93.5	2	6.06
7	94 – 96	95	93.5	96.5	2	6.06
Σ					33	100

Table 2. Frequency Distribution of Posttest Scores



Graph 2. Histogram and Polygon of Posttest Values

Based on Figure 4.2, it can be seen that the highest frequency is between 76-78 with a total of 13 students. While the lowest frequency is between 85-87,91-93 and 94-96 with a total of 2 students. So it can be concluded that after the treatment of the Student Taem Heroic Leadership Type learning model using the Problem Posing Method, the posttest score achieved by students is above the KKM score, which is 75. In other words The Student Taem Heroic Leadership Type learning model using the Problem Posing Method further improves the learning activities of physics subjects for class X students of SMA Islam Yaspia, Bekasi Regency.

Normality testing aims to determine whether the data is normally distributed or not normally distributed. The normality test used in this study with the Liliefors estimate error test with a significance level of $\alpha = 0.05$ with the following hypothesis:

Accept H_0 if $L_{count} < L_{table}$ with normal distribution.

Accept H1 if $L_{count} > L$ data $_{table}$ is not normally distributed.

n	L_{count}	L_{table}	α	Criteria
33	0.0696	0.1543	0.05	Normal

Table 3. Normality Test Results

After calculating normality with the

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Liliefors estimation error, the value of L_o = 0.0696 and $L_{table\ (0.05)}$ = 0.1543 [90 was obtained.] with a significance level of α = 0.05 and a sample size (n) of 33 students. So it can be concluded that the value of L_o = 0.0696 < $L_{table\ (0.05)}$ = 0.1543 which means that the research class is normally distributed.

In this study, to test homogeneity, the Bartlett test was used. The purpose of using the homogeneity test is to show that two or more groups of sample data come from populations that have the same variance.

n	χ^2h	χ^2t	α	Criteria
33	7,957	25.0	0.05	Homogeneous

Table 4. Homogeneity Test Results

From the results of the homogeneity test calculation, the results obtained were χ^2h = 7.957 and χ^2t = 25.0 with a significance level of α = 0.05 and the number of samples (n) was 33 students. So it can be concluded that χ^2h = 2.26 <$\chi^2t_{(0.05)}$ = 33.9 [1]; then the research class is a homogeneous class.

Based on the normality and homogeneity tests that have been tested on the research class, it was concluded that the research class is normally distributed and is a homogeneous class.

CONCLUSION

Based on the research results and discussions outlined in the previous chapter, the following conclusions were drawn: There is a significant influence on students' physics learning outcomes with the Student Team Heroic Leadership Type learning model using *the* Problem Posing Method , this is obtained from the results of the calculation of t_{count} = 3.37 and t_{table} = 1.690 with a significance level of α = 0.05 , at a significance level of α = 0.01 the results of t_{count} = 3.37 and t_{table} = 2.444 with a sample size (n) of 33 . students . So it can be concluded that H_0**it is rejected** and H_1**accepted** which states that there is an influence of the *Student Taem Heroic Leadership* Type learning model using the *Problem Posing Method* on students' physics learning outcomes.

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