THE EFFECT OF STAD TYPE COOPERATIVE LEARNING MODEL ASSISTED BY POWER POINT MEDIA ON STUDENT LEARNING OUTCOMES ON THE SUBJECT MATTER OF TEMPERATURE AND HEAT TEMPERATURE AND HEAT

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Abstract

The selection of an inappropriate model and the lack of use of learning media cause low student learning outcomes. This study aims to determine the effect of STAD type cooperative learning model assisted by power point media on the subject matter of temperature and heat. The type of this research is quasi experiment. The population in this study were all students of class XI SMA Negeri 1 Percut Sei Tuan. Sampling was done by simple random sampling technique consisting of two classes, namely class XI-Matlanfor as the experimental class and class XI-Matlansos as the control class, each of which amounted to 33 people. The instrument used was a student learning outcomes test totaling 20 questions in the form of multiple choice. The results of data analysis showed that the STAD type cooperative learning model assisted by power point media had a significant effect on student learning outcomes on temperature and heat material.

Keywords: STAD type cooperative, power point media, learning outcomes

INTRODUCTION

According to Purwanto (2017) Education is a process of deliberate activity on student input to produce the desired results according to the objectives applied. As a deliberate process, education must be evaluated to see whether the results achieved are in accordance with the desired goals and whether the process carried out is effective in achieving the desired results. While in reality, the problem faced by the world of education is the weak learning process activities and the low quality of education so that low student learning outcomes. In the learning process, children are less encouraged to develop thinking skills.

The teaching and learning process at school is a core activity that must be improved, so that educational goals are achieved in the form of changes in behavior, knowledge, and skills in students. Learning that does not involve students actively causes a lack of balance in students' cognitive, affective, and psychomotor abilities. Learning activities are one of the most important activities in gaining knowledge at school, which means that the success or failure of achieving educational goals depends on how the learning process takes place in the classroom. Facts in the field show that in Indonesia science learning outcomes, especially physics, are still very low. (Susanto, 2013)

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Physics is one of the branches of Natural Sciences (IPA) that studies natural phenomena or phenomena that often occur in everyday life. Physics as one of the subjects taught at the primary and secondary education levels aims to prepare students to deal with changing circumstances and skills and how to respond to them. The purpose of learning physics is to be able to prove the truth of natural events by applying and formulating the basic theories of natural science in everyday life and preparing students to be able to use physics and science attitudes in everyday life in studying and linking it with various sciences. Therefore, in physics learning activities, a model or learning method is needed that makes students look more active in the learning process and also trains students to find their own understanding and knowledge by applying the right model and media. (Mutmainnah, 2017)

Based on the results of preliminary studies that have been conducted by researchers with physics teachers at SMA Negeri 1 Percut Sei Tuan which is located at Jl. Irian Barat Sampali Village No.37, Medan Estate, Kec. Percut Sei Tuan, Kab. Deli Serdang, the teacher said in the interview that student learning outcomes in physics material are low, where students are less able to understand concepts in temperature and heat material, this can be seen from student test scores that only 25% of students are able to reach the Minimun Completeness Criteria (KKM) score of 75 set by the school. Some of the factors that cause low student learning outcomes are the models used by teachers that are not optimal, there are still many teachers who find it difficult to determine learning models in the classroom. Teachers tend to use the lecture method so that the process of teaching and learning activities becomes monotonous and unvaried, this makes students bored and students are not interested in physics lessons. Furthermore, the lack of teacher skills in making and utilizing learning media, teachers also rarely use media in the process of teaching and learning activities in the classroom. This causes the learning process in the classroom to be less interesting so that students are less active in participating in learning activities. Lack of student learning resources where there are still many students who only wait for explanations from teachers about learning materials, for that teachers must choose the right media that can cover material from various learning sources so that it can expand students' knowledge.

Based on observations from the results of a questionnaire that researchers have distributed to 33 students. The data obtained, 75% of students said that physics lessons were difficult to understand and less interesting because the teacher did not vary the model used, 50% of students stated that physics lessons were boring where teachers rarely used media in the learning process, 25% of students tried to find the right answer and solve the problems given by the teacher, 25% of

students were active in answering questions given by the teacher and it could be said that only certain students were able to provide arguments to the teacher.

The problems in the observation results can be overcome by applying models and media in learning because models and media are indispensable in today's times, especially in physics learning. Therefore, a model is needed that makes students more active in the learning process and can also train students to find their own understanding and knowledge. The selection of an effective learning model can increase interest, enthusiasm, the ability to be able to work together with friends in finding a problem, and is expected to improve student physics learning outcomes. One of the learning models that can improve student learning outcomes and increase student activeness and learning skills is the Student Teams Achievement Division (STAD) type cooperative learning model.

STAD (student team achievement division) is one of the simplest types of cooperative learning models where students are grouped into groups of 4-6 members, and each group must be heterogeneous. This type was developed by Slavin, this type is one of the types that has the advantage of involving students to play an active role in their respective groups to motivate and help each other in mastering the subject matter in order to achieve maximum achievement. (Isjoni, 2013).

In addition, in optimizing the STAD type cooperative model, researchers also used learning media as support, namely power point. Power point media can streamline the teacher's time to explain the material so that students have plenty of time to discuss in their respective groups. This is in line with the research of Amirul Iman Nasution (2022) which states that learning media is one form of technology utilization.

The existence of learning media is expected to improve the quality of the process of learning and teaching activities in the classroom, one of the excellent media in presenting a presentation material is power point, because power point can process text, images, colors, displays, and animations that can be tailored to the needs of students. Armani (2021) states that power point media is very supportive in learning because power point media is interesting, stimulates students, visual displays are easy to understand, makes it easier for educators, and is practical, so that power point media can support the learning process to be effective and can improve student learning outcomes. Fitri (2020) states that power point media is applied with various features that load on inserts, animations, and transitions so that the resulting slides do not run one way, and can be

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controlled by the user, by using power point teachers can make the learning atmosphere in the classroom more enjoyable.

Research on the STAD type cooperative learning model with the help of this media has been widely conducted, among others: Utami Santi (2015) stated in her research that the average value of student learning outcomes treated with the STAD type cooperative learning model was 76.50 and with conventional learning was 63.00. In line with that, Sunilawati (2013) stated that there were differences in student learning outcomes using the STAD and NHT type cooperative models. The average learning outcome of students using STAD type was 79.46, while the learning outcome of students using NHT type was 72.83. This shows that the learning outcomes of students using the STAD type cooperative model are higher than the average learning outcomes of students taught using the NHT type cooperative method. In line with that, Nurmila and Prajono (2019) stated that student learning outcomes increased with an average pre-test of 66.62 to an average post-test of 81.09. The weaknesses of previous researchers are inefficient time management so that learning activities and learning outcomes are still not good.

Based on the background of the problem, researchers are interested in conducting research with the title: The Effect of STAD Type Cooperative Learning Model Assisted by Power Point Media on Student Learning Outcomes on the Subject Matter of Temperature and Heat.

METHOD

This research was conducted at SMA Negeri 1 Percut Sei Tuan, with the address Jl. Irian Barat Sampali Village No.37, Medan Estate, Kec. Percut Sei Tuan. The population in this study were all 11th grade students of SMA Negeri 1 Percut Sei Tuan. Samples were taken from the population using simple random sampling technique, the sample consisted of two classes, namely class XI-Matlanfor became the experimental class and class XI-Matlansos became the control class.

In this study, both classes were given a pretest before being given different treatments to determine the initial ability of students in both classes. STAD type cooperative learning assisted by power point media was applied to the experimental class, while conventional learning was applied to the control class. Student learning outcomes were obtained from the posttest given to both classes after being given different treatments. The research design is described in Table 1.

Table 1. _Pretest-Posttest Control Group Design_

Class	Pretest	Treatment	Posttest
Experiment	T_1	X	T_2
Control	T_1	Y	T_2

Informastion:

$T_1 = T_2$

T_1 : _pretest_ in both class

T_2 : _posttest_ in both class

X : treatment using the STAD type cooperative learning model assisted by power point media

Y   : treatment using conventional learning

Data collection in this study was carried out using a student learning outcomes test instrument totaling 20 items in the form of multiple choice. The test instrument was carried out to determine the effect before and after being given treatment.

The data on learning outcomes that have been obtained are tested by hypothesis testing using the t-test. The average value of learning outcomes is compared with the t-test of the experimental class and control class which are usually homogeneously distributed. The data obtained were averaged and previously data analysis was carried out with the following steps: 1) Calculating the mean and standard deviation, 2) Normality test, 3) Homogeneity test, 4) Hypothesis test (t-test), 5) N-Gain test. 6) Effect Size Test

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RESULTS AND DISCUSSION

Result

The results obtained from the research that has been done are that the pretest value in the experimental class is 49,55, and the pretest value in the control class is 49,55. The following are the pretest values in the experimental class and control class in the following table:

Table 2. Pretest value data

Value	Exp. Class	Value	Control Class
	Frequency		Frequency
25-33	3	25-31	3
34-42	5	32-38	3
43-51	12	39-45	9
52-60	10	46-51	3
61-68	2	52-58	5
69-77	1	59-65	10

The two classes were given different treatments where. The experimental class was given STAD type cooperative learning, and the control class was given conventional learning. The average post-test learning outcomes for the experimental class was 74,55, and the average post-test for the control class was 56,82. Based on the learning outcomes in the post-test, the scores in the experimental class are higher than the control class. Post-test scores in the experimental class and control class are described in the following table:

Table 3. Posttest value data

Value	Exp. Class	Value	Control Class
	Frequency		Frequency
55-60	2	35-41	2
61-66	2	42-48	4
67-72	7	49-55	10
73-78	11	56-61	6
79-84	7	62-68	6
85-90	4	69-75	5

Discussion

Pretest data analysis showed that the experimental and control classes were normally distributed, had homogeneous variances and had the same initial ability, namely the average value of the experimental and control classes was 49.55 and 49.55. Then the two sample classes were given different treatments, the experimental class used the STAD type cooperative learning model assisted by power point media while the control class used a conventional learning model. Based on the post-test data analysis, it shows that the post-test data is normally distributed and homogeneous, namely the average value of the experimental and control classes is 74.55 and 56.82. The results of data analysis show that the experimental class treated with the STAD type cooperative learning model assisted by power point media has a better value than the control class which is treated using conventional media. In line with the research of Umi Utami (2019) that the average value of post-test learning outcomes of experimental class students was 76.50 compared to the control class of 63.00, from the results of this study it can be concluded that the STAD type cooperative learning model assisted by power point media has an effect on student learning outcomes.

These results were obtained because learning using the STAD type cooperative model combined with power point media helped students in the learning process. Students seemed happy with the new learning because students were encouraged to actively ask questions and give opinions, were able to conduct experiments well, actively discuss in groups to compile reports on experimental results, and answer the problem solving indicators on the LKS well. In line with research conducted by Fitri (2020) that through the STAD type cooperative model assisted by power point media, the learning process feels more fun to see, read, and remember. And it makes it easier for students to visualize the concepts that exist when carrying out direct experiments, so that students can better understand and be able to solve problems on the LKS.

The STAD cooperative learning model has learning stages that can improve student learning outcomes. The first stage in the STAD type cooperative model is the presentation of material and using student worksheets to encourage students' enthusiasm or interest in learning and students' attention is better and learning becomes more innovative. In the second stage of STAD, group discussions are conducted so that learning is effective and evenly distributed, not only followed enthusiastically by a few students, this is because in group discussions each student must work and learn together within a predetermined time and find solutions together. In the third stage, individual tests are given to each student, and the value of these individual test results will

contribute to the value of the group, so that something is more enthusiastic and enthusiastic in group discussions in the previous stage. In the fourth stage, awards are given to each group, this award will provide encouragement for each group to learn and also to get the title of super group, very good group or good group.

The implementation of the STAD type cooperative learning model assisted by power point media can improve student learning outcomes, but during the learning process there are still obstacles faced by researchers which cause the achievement of learning outcomes to be not optimal and below the KKM. As for some of the obstacles faced by researchers, namely so that students are less active and less confident in expressing opinions and many students still rely on their active friends, besides that there are still students who are indifferent to the teacher's instructions because the student's position is at the back. Researchers are also unable to carry out practicum in the laboratory so that researchers and students carry out practicum in the classroom. Thus, based on the results of research conducted at SMA Negeri 1 Percut Sei Tuan based on existing theories and it is proven that there is an influence of the STAD type cooperative learning model assisted by power point media on student learning outcomes.

CONCLUSION

Research conducted at SMA Negeri 1 Percut Sei Tuan concluded that the learning outcomes of students treated with the STAD type coopertive learning model assisted by power point media were higher than those of students treated with the Conventional learning model. This can be seen based on the average learning outcomes of experimental class students who were treated with the STAD type coopertive model assisted by power point media of 74.55 while the learning outcomes of control class students who received Conventional learning amounted to 56.82. There is a significant influence on student learning outcomes at SMA Negeri 1 Percut Sei Tuan on the subject matter of temperature and heat through the STAD type cooperative learning model assisted by power point media.

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