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The Influence of Student Teams Achievement Division Combined with Discovery Learning To Improve Student Learning Outcomes and Activeness

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Abstract

This study aims to determine the influence of learning outcomes and students' activeness in the classroom who apply the learning model of student teams achievement division combined with discovery learning with classes that apply conventional learning models—using quantitative research instruments, quasi-experimental design and analytical techniques used namely pretest, posttest, and observation. The sample used in this study was 72 students consisting of 2 classes. This study's sampling techniques use total sampling—data obtained from pretest and post-test results based on indicators of student learning outcomes and activeness. The results showed that there are differences and improvements in learning outcomes and activeness of students who apply the learning model of student teams achievement division combined with discovery learning compared to conventional learning models. This is evidenced by the first hypothesis test results using a t-test that showed the study results of the experimental group of 82.11 and the control group 75.56 then there was a significant difference (H0 was rejected). The second hypothesis test results using t-test showed the activeness of the experimental group study of 75.44 and the control group 64.44 then there was a significant difference (H0 was rejected). The results of the third hypothesis test using again test that showed an increase in study results by 0.45 in the experimental group and a value of 0.20 in the control group. The results of the fourth hypothesis test using again test showed an increase in learning activeness of 0.52 in the experimental group and 0.28 in the control group.

Keywords: Discovery Learning, Learning Activeness, Learning Outcomes, Student Teams Achievement Division

1. INTRODUCTION

Education is a planned and conscious effort to realize the atmosphere of learning and learning process so that learners actively develop their potential to have religious-spiritual strength, personality, self-control, morals, and skills needed by themselves, the surrounding community, and the state (Suryati, 2016). According to Indrastuti et al. (2017), education is a process that is aware of the purpose. The purpose in question can be interpreted as an effort to formulate the results expected by students after carrying out a practical learning experience.

Vocational High School is an advanced secondary education that has the primary goal of preparing a highly disciplined, skilled, and professional workforce with the demands of the world of work. The purpose is stated in The Sisdiknas (National Educational Systems) Law article 15 in which mentions the specific purpose of Vocational High School is to prepare students to be productive human beings, able to work independently, fill existing job vacancies in the business world and the industrial world as a mid-level workforce by the competencies in the skills program chosen. One of the efforts to make it happen is to improve the quality of learning.

Learning is a process of interaction between teachers and students and the elements in it. Teachers are the most dominant factor that determines the quality of education. Good quality of learning will undoubtedly produce good learning results. According to Usman et al., (2016) in the learning system teachers are required to be able to choose the right learning methods, be able to select and use learning facilities, be able to choose and use evaluation tools, be able to manage to learn in the classroom and the laboratory, master the material and understand the character of students. One of the teacher's demands is to be able to choose the right learning model for teaching. Suppose the teacher's learning model is appropriate. In that case, the achievement of learning objectives will be easier to achieve so that the value of students' learning completeness will increase, interest and motivation of students' learning will also increase.

The learning model is a guideline pattern in planning learning in groups as well as tutorials. Each learning model requires a different management system and learning environment to provide various experiences and roles to students and the classroom atmosphere (Sani, 2015). According to the selection of learning, models must pay attention to the students' condition, the learning environment, and the learning objectives to be achieved. Learning models have a broader meaning than learning strategies, methods, and procedures. And according to Usman et al., (2016) explained that to know the quality of a learning model can be seen from two aspects, namely process and product. Elements of the method refer to whether learning can create fun learning situations and encourage learners to learn and think creatively and actively. Judging from the product aspect refers to whether learning can achieve the goal, namely improving students' ability by the standards of competence or proficiency standards that have been determined.

Through the group learning process little by little able to improve students' learning abilities. Students will more easily understand the learning materials, improve student cooperation in each group, and improve the attitude of respect for others' opinions. Teachers provide lessons, and it is expected that all students in each group can master the material delivered through discussions with their respective groups (Wardana et al., 2017). By using fun learning models, increasing the activeness and learning outcomes of students. This can be obtained through the Student Teams Achievement Division. Learning by forming a group is one of the learning models expected to increase activeness and interaction between students. All students in each group will motivate each other and help in mastering the subject matter through discussions to achieve maximum achievement.

The Discovery Learning model is a theory in learning presented in raw form or not (Fariyani et al., 2015). This learning process occurs when the material presented becoming learners' exercise to organize existing problems. This learning model is expected to improve the individual organizing of each student. Here students must play an active role in learning in the classroom. Learners will organize the learning materials or materials with a final form. This learning model can also be interpreted to understand the concepts, meanings, and relationships of the learning discussed. This learning is done through Observation, Classification, Measurement, Prediction, and Determination of the final results.

Learning with the Student Teams Achievement Division model, combined with Discovery Learning, will increase students' activeness in each group. Students in the group have a shared responsibility to find solutions to teachers' problems or problems (Tohari et al., 2016). The Discovery Learning model is a modern teaching model that is done by developing the way students learn to be more active, independent and improve student understanding. Students will look for answers to questions themselves or other students. Students will become more involved in searching, experience, and finding the solutions they are looking for. This indirectly increases students' creativity in the learning process.

2. RESEARCH METHOD

This type of research uses quantitative research. Quantitative research can be interpreted as research based on the philosophy of positivism used to research a particular population or sample, data collection using instruments that are then processed statistically to prove an established hypothesis (Fatmawati, 2015).

This research uses a quasi-experimental design method. The design of this study uses pretest-posttest. The research was conducted on two groups, namely the experimental group and the control group. The

experimental group was given the treatment of the application of the student teams achievement division learning model combined with discovery learning. In contrast, the control group was assigned the treatment of the application of conventional learning models.

Table 1. Research Design

Class	*Pretest*	Treatment	*Posttest*
Experiment	Z1	X1	Q1
Control	Z2	X2	Q2

Sampling techniques in this study use total sampling. The population in this study was 72 students. In this study, data retrieval techniques through pretest-posttest and observation sheets. This research began with the creation of instruments consisting of The Learning Implementation Plan, pretest-posttest multiple-choice questions, and observation sheets based on indicators of student activity. The second phase was the implementation of pretests. The third treatment carried out in each class namely control classes with the application of conventional learning models and experimental class with the application of student teams achievement division learning models combined with discovery learning. The fourth posttest implementation dan data collection. Soon afterwards, the data analysis followed by concluding phase. The research procedure in this study can be seen in Figure 1.

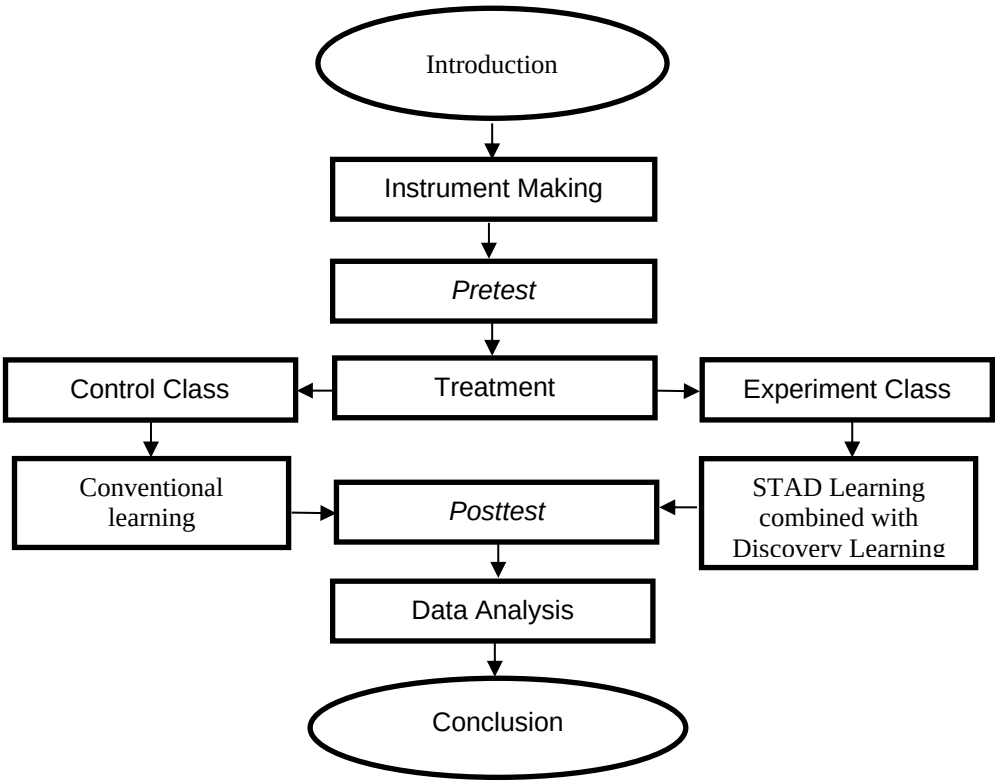

Figure 1. Research procedure

3. RESULTS AND DISCUSSIONS

3.1. Results

Before the research was conducted in experimental class and control class, a try out was conducted to test the instrument to find out if the instrument is feasible or not used for research data collection. The tests are performed in the form of question validity tests, question reliability tests, difficulty level tests, and

different power tests. Instrument trials were conducted on 15 students whose classes were not research classes and had obtained research-related materials. Based on 15 students who participated in the try out can be known as r-table = 0.541. The results of the try out obtained results with the number of questions that passed the validity test as many as 45 questions (22 pretest questions and 23 post-test questions) while the question must be discarded as many as five questions. For reliability test results obtained a value of 0.746 for pretest and 0.745 for post-test, it can be categorized as having a high-reliability value.

Here are the data of students' pretest and posttest learning results based on treatment classes.

Table 2. Student Learning Outcomes

Variable	Experiment Class	Control Class
Number of Students (N)	36	36
Average *Pretest* Value	68,56	69,22
Average *Posttest* Value	82,11	75,56
Δ Value	13,55	6,34

Table 3. Student Learning Activeness

Variable	Experiment Class	Control Class
Number of Students (N)	36	36
Average Starting Value	49, 44	49, 22
Average Final Value	75, 44	64, 44
Δ Value	26	15, 22

Table 2 shows student learning outcomes. The control class pretest showed an average percentage of students' learning outcomes at 68.56%. The experimental class pretest showed an average rate of students' learning outcomes at 69.22%. Pretest results of both classes showed that students' initial abilities were categorized as balanced. Posttest results of the control class showed an average percentage of students' learning outcomes at 75.56%. In contrast, posttest results of experimental classes showed an average percentage of students' learning outcomes of 82.11%. From these results, it can be seen that the posttest value of the experimental class is higher than the posttest value in the control class.

Table 3 shows the value of students' learning activities. The initial activeness score of students in the control class showed an average percentage of 49.22%. The initial activeness value in the experiment class showed an average percentage of 49.44%. In the final activeness value, the control class results show an average percentage of 64.44. While the final activeness results in the experiment class showed an average percentage of 75.44%. From the results of the table above it is concluded that the value of learning activeness at the end of the experiment class is greater than the control class.

Table 4. First Hypothesis Test Results

Variable	Experiment Class	Control Class
Number of Students (N)	36	36
Significant Value *Pretest*	,761	
Significant Value *Posttest*	,000	

Table 4 shows the results of the T-test in the first hypothesis of 0.000 which means that the grade is less than the error level of 0.05, it can be concluded that the two classes have a significant difference in student learning outcomes (H0 is rejected).

Table 5. Second Hypothesis Test Results

Variable	Experiment Class	Control Class
Number of Students (N)	36	36
Significant Value of Initial Activeness	,892	
End Activeness Significant Value	,000	

Table 5 shows the results of the T-test in the second hypothesis of 0.000 which means that the grade is less than the error level of 0.05, it can be concluded that the two classes have a significant difference in a student learning activity (H0 is rejected).

Table 6. Third Hypothesis Test Results

Variable	Experiment Class	Control Class
Number of Students (N)	36	36
Average Score (g) %	45,23	20,39
Minimum Score	30,00	14,29
Maximum Score	75,00	30,00

Table 6 shows that the standard gain in the experiment class is greater than the control class (0.45 > 0.20), so there is an increase in student learning outcomes so that H0 is rejected and H1 is accepted. It can be concluded that the implementation of student teams achievement division learning model combined with discovery learning is more effective to improve student learning outcomes compared to classes that apply conventional learning models.

Table 7. Fourth Hypothesis Test Results

Variable	Experiment Class	Control Class
Number of Students (N)	35	35

Average Score (g) %	52,55	28,71
Minimum Score	40,00	14,29
Maximum Score	70,00	45,45

Table 7 shows that the standard gain in the experimental class is greater than the control class (0.52 > 0.28), so there is an increase in student learning activity so that H0 is rejected and H1 is accepted. It can be concluded that applying student teams achievement division learning model combined with discovery learning is more effective in improving student learning activeness compared to classes that apply conventional learning models.

3.2. Discussion

Based on the first hypothesis test obtained the results of the study in the form of an average pretest value of the experimental class of 68.56 and control class of 69.22. Showing the average pretest value of both sample classes has not met the minimum completed criteria of 75. Of the two sample classes, 72 students, only 22 met the graduation criteria. While at the second meeting, the average posttest score of the experiment class was 82.11, and the control class was 75.56. Showing the average posttest score that meets the minimum graduation criteria in the experimental class of 30 students, the other six have not met. In the control class, 19 students completed the minimum graduation criteria; another 17 had not met. This hypothesis test showed differences in student learning outcomes in applying student teams achievement division learning model combined with discovery learning with the application of conventional learning models. The results of this study are supported by Widyatmoko & Wanarti, (2015) where the results showed that the merging of learning results in the Student Teams Achievement Division learning model is better than the learning outcomes in conventional learning models.

Through the observation sheet, the level of activeness of students' learning conducted before and after applying the learning model in each sample class can be concluded that there is a difference in student learning participation in the experimental class and a significant control class of 0.000 (sig. < 0.05) by hypothesis 2 testing using t-test. Also, in hypothesis 4 testing using a gain test, there was an increase in students' learning activity in the experimental class by 52.55 and the control class by 28.71. From this test, it can be known that there is a higher increase in learning participation in the experimental study by applying the Student Teams Achievement Division Learning model combined with Discovery Learning.

At the first meeting, observations were made in the classroom. Judging from the observation sheet with an active activeness score target of 100, the average total score obtained in the experiment class was 49.44, and the control class was 49.22. The results of these observations showed that they had not yet approached the target score of learning activeness. Meanwhile, in the second meeting, the average student's learning activity score in the experiment class was 75.44, and the control class was 64.44. The results of calculating students' level of activeness at the first and second meetings showed a significant difference in improvement in the experimental study approaching the activeness target with an average initial score of 49.44 to 75.44. Different in the control class with an average initial score of 49.22 to 64.44, which showed a less significant improvement in the level of learning activeness. The results of this study are supported by statement Khasanah (2016) which explains that the level of activeness of students' learning greatly affects learning outcomes, as well as one of the factors in the activeness of students' learning, is comfort in the teaching process.

Based on the results of standard gain calculations of students' learning outcomes in the experimental class and control class, it can be known that the results obtained in the experimental class are much higher when compared to the results obtained in the control class. In the standard gain, the experiment class obtained is 0.45 with a moderate category, while in the control class obtained a standard gain value of 0.20 with a low category. Therefore, this test accepts the hypothesis that the application of the Student Teams Achievement Division model combined with Discovery Learning is more effective when compared to conventional learning. This result is in line with statement Indrastuti et al., (2017) which explains that the improvement of student learning outcomes using the Student Teams Achievement Division learning model

combined with Problem Based Learning has a higher increase in learning outcomes than conventional learning models.

Based on the results of the calculation of the standard gain level of activeness of students in practical classes and control classes. Results were obtained were in the experiment class was higher than the results obtained in the control class. In the standard gain, the experiment class obtained is 0.52 with a moderate category, while the control class obtained a standard gain value of 0.28 with a low category. Therefore, this test accepts the hypothesis that the Student Teams Achievement Division model combined with Discovery Learning is more effective in improving student learning activity than conventional learning. The results of the study were supported by relevant research results from Wardana et al. (2017) which explained that the implementation of learning models in groups could produce a significant increase in learning activeness. Based on this opinion, it supports that the Learning model of Student Teams Achievement Division combined with Discovery Learning can increase the activeness of students' learning in individuals and groups.

4. CONCLUSION

Based on the results of the analysis of research data above, it can be known that there are differences in student learning activity between learning that applies the learning model of student teams achievement division combined with discovery learning with conventional learning. The difference is reviewed from the calculation using the T-test obtained results that sig < α is 0.000 < 0.05 at a level of significance of 5% so that H0 is rejected and H1 is accepted. The study results showed that the average test grade was higher (82.11%) compared to the control class (75.56%). There is an increase in learning outcomes in the classroom that applies the student teams achievement division learning model combined with discovery learning compared to classes that use conventional learning models. The student teams achievement division learning model combined with discovery learning has higher effectiveness. The improvement was reviewed from the calculation of the gain test obtained with the results of 0.45 in the experiment class and 0.20 in the control class. There was also an increase in student learning activity outcomes in the classroom that applied the student teams achievement division learning model combined with discovery learning higher (0.52) than classes that applied conventional learning models (0.28), the results were obtained from the calculation of gain tests so that it can be concluded that classes that involve the student team achievement division learning model combined with discovery learning experience improved learning outcomes and higher learning activeness compared to classes that apply conventional learning models.

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