

SE-009

THE EFFECT OF COOPERATIVE LEARNING MODEL TYPE GROUP INVESTIGATION ON STUDENT'S ACHIEVEMENT OF STATIC FLUID IN CLASS XI OF SMA NEGERI 1 PERBAUNGAN A.Y. 2013/2014

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ABSTRACT

The objectives of this research is to find out the effect of Cooperative Learning Model Group Investigation Type on student's learning outcomes in subject static fluid in class XI SMA Negeri 1 Perbaungan A.Y. 2013/2014. The research method was quasi experimental. The populations is all class XI IPA students in semester II that consist of 8 classes in SMA Negeri 1 Perbaungan. The results that were obtained: pre-test mean value of experiment class is 42.26, control class is 40.16 and post-test mean value of the experiment class is 80.32, control class is 62.90. So, there is the effect of Cooperative Learning Model Group Investigation Type on student's learning outcomes in subject static fluid in class XI SMA Negeri 1 Perbaungan A.Y. 2013/2014. Based on observation, the character's value on last meeting of experiment is 86.73 and control class is 74.55. This proves that the character of students in experiment class better than control class.

Keyword: *Cooperative Learning, Group Investigation, Student's Achievement, Character.*

INTRODUCTION

The process of formal classroom teaching and learning is very important to improve the ability to think, ability to cooperate, self-confidence, attitude and moral of each student. In the process of teaching and learning in class, something very important is the interaction between students and teachers. Teachers need to understand a lot about the material circumstances and conditions including situation of students. To understand the student teacher should know about the abilities and character of each student and the teacher must build the character of students in accordance with the character education.

There are some skills that need to be understood by such teachers understand the material, students understand and have the teaching skills. The skills that teachers provide direction not only perform routine activities, but also a dynamic activity that is able to develop the knowledge, attitudes and morals of each student.

Low levels of affective and moral students can be marked on the less character education are applied in teaching and learning. Teacher should implement character education in accordance with the lesson plan that integrates character.

Under Law No. 20 Year 2003 on National Education System said that "education is a conscious effort to create the conditions of planned learning and the learning process so that learners are actively developing the potential for him to have the spiritual strength of religious, self-control, personality, intelligence, noble character, and skills needed him, society, nation and state. Recognizing this, the government is very serious about education, because with a good education system is expected to appear next generation of qualified and able to adapt to life in the community, the nation and the country. ". The importance of education as the capital of the younger generation, to achieve a successful and capable citizens who will be able to build and the nation towards a better state.

Government always pay attention to education in Indonesia. All government efforts are characterized by an increase in the National Budget for education, curriculum change, parenting educator, working with other countries to improve the quality of education etc. But, the government can not fend for themselves, which is necessary for the participation of all stakeholders of education include: the Ministry of Education, Superintendent, Principals, Teachers, Parents, School Committee, School Board, Community, Business and Industrial World, as well as all parents concerned agencies directly or indirectly with education activities in schools. The cooperation is performed to achieve national education goals are written in the Law is to develop the potential of learners in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, residents creative, independent, and being a responsible and democratic.

School as an institution of learning activities take place. An excellent school that is able to act as an educational process (the process of education that emphasizes the education and teaching activities), the process of socialization (social processes, especially for students), and the transformation process (the process of behavior change towards the better). At school, teachers are the most influential on the quality and abilities of learners, as teachers interact and communicate directly and very close to the learners. Learners are educated by teachers at school every day. The ability of teachers to educate greatly affect the success or failure of learning activities at schools. For the teacher must be able to present a more active learning activities, creative, and fun for the achievement of the golden generation in the future. Thus, it can be concluded education is very important and key to the success of the nation.

One of the subjects taught in schools, especially at secondary school is physics. Physics is the study of natural phenomena. Therefore, physics is one of the lessons is quite interesting because it deals directly with natural phenomena and knowledge can be applied in everyday life.

But in fact physics is one of the lessons that have the lowest scores. This is caused by the large number of students who do not like physics because they think physics is a difficult subject to understand, especially when faced with complicated formulas and calculations. This fact is consistent with the observations made by researchers when implementing the Integrated Field Experience Program in SMA Negeri 1 Perbaungan. From the above observations, the researchers concluded that students at SMA Negeri 1 Perbaungan not interested in learning physics. And this will affect student outcomes in learning physics and character.

The observation of three physics teachers when they teach in SMA 1 Perbaungan, it was found that all the teachers using conventional learning physics to explain phenomena in physics class.

Conventional learning used by physics teachers rarely engage students in working in groups. This resulted in a lack of interaction between students and teachers as well as students and students so that students who are less able and shy do not experience improvement in achievement, achievement even decreased. While the students are classified as smart and not shy getting smarter. This obviously makes students consider physics is boring lessons as well as lowering the character of students, especially in the classroom learning. Therefore, an increase in the intensity of group study is needed to improve the attitude, moral, mental, ability to interact, as well as student achievement.

Lickona in Muslich (2011:35) reveals that there are ten times the signs to look out for if these signs are already there, meaning a nation to the brink of destruction. The signs in question are (1) an increase in violence among adolescents, (2) the use of language and kata0kata deteriorating, (3) peer-group influence is strong in violence, (4) increase in self-destructive behavior, (5) the blurring of guidelines morally good and bad, (6) the declining work ethic, (7) the lower the respect for parents and teachers, (8) lack of a sense of individual responsibility and citizens, (9) be entrenched dishonesty, and (10) the existence of mutual suspicion and hatred between fellow him. When examined, the tenth sign of the times it turns out that already exist in Indonesia.

To solve the above problems, the researchers changed the conventional learning with cooperative learning model. Cooperative learning model consists of several kinds, one of which type of cooperative learning model Investigation Group is a model that does not require students to memorize facts and formulas, but the models that guide students to identify a topic, planning investigations in groups, conduct investigations, make reports, and presented the results of research. Group cooperative learning model helps students investigate physics to understand clearly, because the students will learn to their own and find answers to their team.

And it will make the students have a good teamwork ability and can memorize lessons for a long time.

Based on the above writer wants to do a study titled "The Effect of Cooperative Learning Model Type Group Investigation on Student's Achievement of Static Fluid in Class XI of SMA Negeri 1 Perbaungan A.Y. 2013/2014".

METHODOLOGY

The research has been done in SMA Negeri 1 Perbaungan in the Academic Year 2013/2014. The population in this research were all students class XI IPA in SMA Negeri 1 Berastagi, that consist of 8 classes with the student average is 38 students every class. The sample in this research were taken with cluster random sampling. The sample were the experimental class used Cooperative Learning Model Group Investigation Type and the control class used Conventional Learning. Samples will be taken selected cluster random sampling, where each group/class representing a population with the same characteristics have the same opportunity to be sampled. The research design can be shown in Table 3.1.

Table 3.1 Research Design

Group	Pre Test	Treatment	Post Test
E	T ₁	X	T ₂
C	T ₁	O	T ₂

Description: E = Experiment Class, C = Control Class, T₁ = Pre – test for experiment class and control class, T₂ = Post – test for experiment class and control class, X = Cooperative Learning Model Group Investigation Type Learning Model, Y = Conventional Learning

The selection of data is carried out to observe whether the samples come from normal distribution population or not. The test used is Liliefors test and Homogeneity test, to know the homogeneity of both samples used formula as follows (Sudjana, 2005) :

$$F_{count} = \frac{S_1^2}{S_2^2}$$

(S₁² = Biggest Variance Data; S₂² = Smallest Variance Data)

The test criteria are received Ho: the data come from a homogeneous population if F_{count} < F_{table}, where the F_{table} obtained from the distribution list F with α = 0.05. Here α is a real level for testing.

Hypothesis test use t-test with formula (Sudjana, 2005) :

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

S is combination of standard deviation can be calculated with formula :

$$S^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

Where: \bar{x}_1 = Average value in experimental class, \bar{x}_2 = Average value in control class., n_1 = Total of sample in experimental class, n_2 = Total of sample in control class. S^2 = Variance, S_1^2 = Variance in experimental class, S_2^2 = Variance in control class, t = t distribution

Testing Criteria : H_0 accept if $t_{\text{calculate}} < t_{(1-\alpha)}$ where $t_{(1-\alpha)}$ get from distribution table t with independent degree (dk) = $n_1 + n_2 - 2$ and the probability $(1-\alpha)$ with $\alpha = 0,05$ for another value of t H_0 not accept, so Guided Discovery Learning Model has influence to the student's learning outcomes in learning physics.

RESULTS

The results of research conducted to know students learning outcomes before the two of samples applied different treatments, namely the experimental class treated by using Cooperative Learning Model Group Investigation Type and control class treated by Conventional Learning.

Based from research data, the pre-test of student in experiment and control class in score range from 0 until 100, and got the mean of pre test score in experiment class is 42.26 with the deviation standard of 7.62 while mean pre-test score in control class is 40.16 with deviation standard of 7.80.

The experiment class with treatment using Guided Discovery Learning Model has mean score is 80.32 with deviation standard of 6.94. While in control class after given treatment with Conventional Learning has mean post test score is 62.90 with deviation standard of 8.64.

The results of hypothesis testing one tail on the post-test with $\alpha = 0.05$ obtained the score $t_{\text{count}} = 8.75$ and $t_{\text{table}} = 1.67$. By comparing t_{count} and t_{table} obtained $t_{\text{count}} > t_{\text{table}}$ it's $8.75 > 1.67$ so H_a accepted. So, can be concluded that the effect of Cooperative Learning Model Type Group Investigation on Student's Achievement of Static Fluid in class XI of SMA Negeri 1 Perbaungan A.Y. 2013/2014.

Student's character in learning process of experiment class at meeting I was 62.36, meeting II was 78.13, and meeting III was 86.73. Student's character in learning process of

control class at meeting I was 60.57, meeting II was 70.25, and meeting III was 74.55. The gain score of experiment class for first-second meeting is 0.42 and for second-third meeting is 0.39. The gain score of control class for first-second meeting is 0.24 and for second-third meeting is 0.14. Thus this case shows that the Cooperative Learning Model Group Investigation Type Learning Model not only improve learning outcomes, but also able to increase the students character. So concluded is learning activity with using Cooperative Learning Model Group Investigation Type Learning Model better than Conventional Learning.

The observation result in student's character showed the attitude of students during the learning greatly affects the value of learning outcomes. The character of student can be seen more specific from doing worksheet in the experimental class and in control class, the character of students can be seen when the researcher doing the teaching activity and giving problems. When students active in the learning activities then the learning outcomes become higher. There is different character of students' in experimental class and control class. The average value of students' character in experimental class is higher than control class. It also that cause the average value of posttest value in experimental class is greater than control class.

The results in Cognitive and character of students showed that there was effect of Cooperative Learning Model Type Group Investigation on Student's Achievement of Static Fluid in class XI of SMA Negeri 1 Perbaungan A.Y. 2013/2014.

In hypothesis test showed that the different increasing of student's learning outcomes in experiment and control class. The student's learning outcomes is better in experiment class. So, can be concluded that have the effect of Cooperative Learning Model Type Group Investigation on Student's Achievement of Static Fluid in class XI of SMA Negeri 1 Perbaungan A.Y. 2013/2014.

CONCLUSION AND RECOMMENDATION

Based on the result research and data collection, can be concluded that : 1) Student's achievement in experiment class after taught by using Cooperative Learning Model Type Group Investigation was increase and has the mean score 80.32. 2) Student's achievement in control class after taught by using Conventional Learning also increase and has the mean score 62.90. 3) Student's achievement in experiment class was greater than student's achievement in control class. So, Cooperative Learning Model Type Group Investigation has the effect on student's achievement. So there was the effect of Cooperative Learning Model Type Group Investigation on Student's Achievement of Static Fluid in class XI of SMA Negeri 1 Perbaungan A.Y. 2013/2014.

According to the data of student's achievement and the experience of author when applying the Cooperative Learning Model Group Investigation Type in class, so the author gives suggestion as : 1) Needed further research to determine the effect of Cooperative Learning Model Type Group Investigation on student achievement in other materials concepts, so that it can measure the extent to which wider this model is effective in learning physics. 2) For the next researcher who wants to do research using Cooperative Learning Model Group Investigation Type, it's better for teacher to develop creativity in implementing the learning process so that student character can be more improved. In addition, teachers can motivate students to be more active so that good communication between students and students and between teachers and students. 3) For the next researcher who wants to do research using Cooperative Learning Model Group Investigation Type expected to allocate the time as efficient as possible in the learning process so that each stage of learning can be done well. 4) For the next researcher who wants to do research using Cooperative Learning Model Group Investigation Type expected to allocate the time as efficient as possible in the learning process so that each stage of learning can be done well.

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