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The Implementation of Group Investigation Model on Learning Outcome at The Topic Ecosystem Class X In SMA Negeri 11 Medan Academic Year 2014/2015

Farahnaz Afriliandini Lubis*), Meida Nugrahalia

Study Programme Biology Education, Universitas Negeri Medan, Jl. Wiliem Iskandar Pasar V Medan Estate 20221. *)Email : Farahnazlubis@gmail.com

ABSTRACT

This research was carried out to find out The Implementation of Group Investigation Model on Learning Outcomes at The Topic Ecosystem Class X in SMA Negeri 11 Medan Academic Year 2014/2015. Therefore, an experimental research was carried as the research as a research design. The population was 2014/2015 academic years students, in the second years students of SMAN 11 Medan, especially the students of class X which consisted of 320 students. From the population was taken 80 students as the sample by using Random Sampling. They were divided into two groups, 40 students in experimental groups taught by using group investigation model and 40 students in control group taught by using direct instruction.

Based on the result of research obtained the mean pretest in class control 44.8 and experimental class 51.7, this shows the initial ability of the both classes is same similarity. Then the both of classes were given a different treatment, the experimental class used Group Investigation and control class used Direct Instruction. After the learning had finished, the both of classes given posttest of control class 77.9 and experimental class 81.75.The result test t obtained that $t_{count} > t_{table}$ (2.03 < 1.66) then H_0 is rejected and H_a accepted. Furthermore, based on percentage of students activity showed that students in experimental class more active than class control. It can be conclude that is effect of group investigation learning outcomes on students at topic ecosystem in class X SMA Negeri 11 Medan Academic Year 2014/2015.

Key words: group investigation model, learning outcome, activity

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INTRODUCTION

The learning process is the interaction of teachers and students to learn the material that has been arranged in a curriculum and the learning process is more effective when student participate actively in the learning process. Student will be able to understand the lesson from their experience and it will enhance outcomes. Therefore, the task of teacher is not only giving the information to achievement of learning experiences of student. Teacher should strive to make the classroom activities learning process can develop learning capacity and potential of student can obtain good learning results.

To achieve the success of the learning process a teacher needs to be able to select and use instructional media in accordance with the teaching materials will be provided to students, taking into account the ability of the learning media stimulation, any form of teacher activities, ranging from learning to design, select and specify materials, approaches, strategies and teaching methods, selecting and determining the evaluation techniques, all directed to achieve the success of students learning. Success or failure depends on a process of learning how a teacher organizes learning system that refers to the techniques, methods, and media in accordance with the teaching materials are delivered to students (Purwanto, 2010).

This is a sign that learning process is a dynamic activity that teachers need to constantly observe the changes that occur in students in the class. So that the learning process is a two-way communication, the teaching is done by the teacher as an educator, while the study carried out by learners (Sudjana, 2005).

From the results of unstructured interviews the subject teacher of Biology of X SMA Negeri 11 Medan and it was suggested that ecosystem is the less focus topic to be discussed. Teacher felt the others topic is more complicated so it needs attention. Teacher through ecosystem topic is easy to understand, but the reality is different. While the In biology especially ecosystem topic, is one topics of natural science that discuss about living things, natural science and student emphasize to be able to analyze and develop concept and skill based on variety of information and experience and what thought to happen or what feel should or should not happened and the concept of the subject matter can be applications in everyday life. From the data at the school obtained the information that shows the evaluation

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mark of biology students in class X still many students who have not passed the minimum competences criteria (KKM), the percentage of completeness of third daily tests only reached 58.5% students in under KKM and 41.4 % students that reached KKM, while the KKM 75, so the learning outcome of student is not satisfactory yet. Actually at this school, learning methods already exist variations but still less. Teachers also to apply some learning model with the method of discussion, but the results also not show progress, although students held discussions method tends inactive and can't express their opinion, than did students who are active on only a few, while others tend to rely on students are usually active in the class. Learning models such as this causes the entire student involvement in learning activities that are very small, because the learning activities are dominated by students who have high ability while low capacity just watching it (passive). It can be seen from their activity like a drowsy, preoccupied with himself, played pens, played cell phone, or learning their nails and jokes with friends and made noisy in class.

There might be several factors that cause low students achievement ,there are internal and external factors. Internal factor include the health, intelligence, attention, interest, talents, maturity and fatigue factor, while the external factors are the outside factors of student, such as a family factors, teaching methods, methods of learning, student activity and curriculum (Slameto, 2010).

One of the ways to overcome this problem is learning involve students actively as well as train the good cooperation between them, using cooperative learning. A cooperative learning model is believed as being able to give chance for students to be involved in discussion, has courage and critical thinking and is willing to take responsibility of his/her own learning. Although it considers as an active role of students as more important, does not mean that teacher in the classroom is not participating. In learning process, teacher has roles as designer, facilitator and guide in the learning process.

Based on the situation, the teacher must have models or methods in teaching. There are many model used by the teacher in teaching biology. One of model is Group Investigation. It promotes effective communication between group members. It also can improve the knowledge and opinion of each members. This strategy is one of modern model of Cooperative Learning Model and this model was first found by

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John Dewey (1970), and then resigned back by Sharan and Sharan (1992).

Nowadays, Group Investigation Model is defined as a group activity of students, ordinarily in small number. In this method the group will clarify their objectives, plan procedure, gather the information, analyze their findings, draw the conclusions and report their findings in front of the class. Thus, when teacher put the students in groups he or she has to ensure that the students whose levels are different are put together. In addition, the activity offered in Group investigation is interesting so that the students will feel the new atmosphere in classroom and are interested in learning process (Arends,2007). Results of research conducted Simbolon Adolf (2011) in high school 1 Percut Sei Tuan country using cooperative learning group investigation on the subject matter and the amount of derivatives shows that student learning outcomes increase with an average value of 33.55 pretest and posttest 70.84. This study was aimed to know the implementation of group investigation model on learning outcome at the topic ecosystem class X in SMA Negeri 11 Medan academic year 2014/2105

METHODS

Location and Time. This study was conducted in SMA Negeri 11 Medan from april until june.

Population and Sample. Population in this research 320 number of student and consist of 8 classes (each class consist of 40 students). The sample were X IPA 5 as an experimental class used cooperative learning model type group investigation and X IPA 6 as a control class used direct instructional.

Research Variable. As the independent variable (treatment), are the cooperative learning model type group investigation and Direct learning model) and the dependent variable, are student learning outcomes in ecosystem topic.

Research Design. The type of this research is quasi experimental. This research conducted in experimental design and divided into two groups, experimental group which is applying cooperative learning model type group investigation and control groupwhich is applying direct instructional.

Research Procedure. The procedure of this research consist of 3 stages, they are preparation step, implementation step and the last is final step. In the preparation step, the researcher did some activities they were sample determination,

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questionairre arrangement and validation instrument to the expert. In the implementation step there, take the sample of population and then students should be taught in the classroom experiment with learning model group Investigation, while the control group was given teaching with direct instruction. After the teaching and learning process, posttest the given to both experimental and control class. While in the final step, the activity was divided into two step, the first was data processing and the second was analysing and discussing data.

Analysis. data analysis techniques are uji t , normality test , homogeneity test.

RESULT

Data Pretest

Before treatment, both of experimental class and control class were giving pretest in order to saw initial ability of students cognitive. From the result, the pretest score of students in experimental class and control class get of mean pretest score in control class 44.8 with the deviation standard is 8.26 while the mean pretest score in experimental class 51.7 ± 8.9

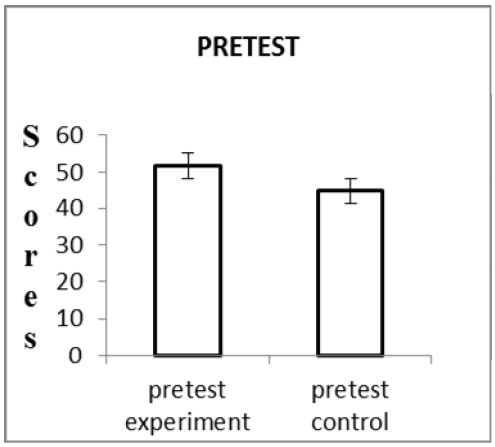

Figure 1.The chart of comparison between pretest data of experimental class and control class

Data Posttest

After treatment done of experimental class with cooperative learning model group investigation type and control class with direct instruction were giving posttest, to known the ability of the student on both of classes. The result showed the average posttest of experimental class has mean score 81 ± 9.07 while the control class has mean score after given treatment with direct instruction has mean score 77.9 ± 8.22.

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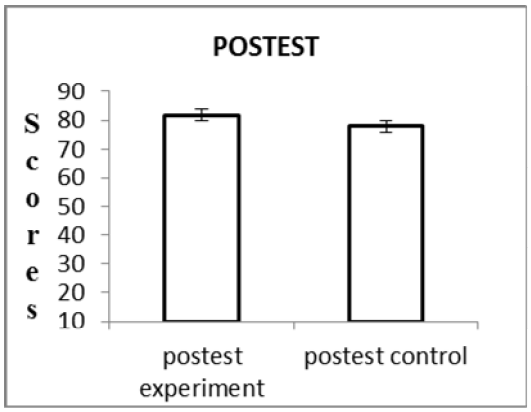

Figure 2. The chart of comparison between posttest data of class experiment and control class

Normality and HomogeneityTest

Pretest Data

Before test of hypothesis, the first is normality test with Liliefors test. Get are pretest score in 2 sample have normality data or $L_{count} < L_{table}$ in significant level 0.05 and n = 40. In Experiment class has the normality is $L_{count} = 0,1380 < L_{table} = 0,1582$, while the control class has the normality is $L_{count} = 0,1190 < L_{table} = 0,1582$. So, the result of normality test of pretest data in both classes normal. Homogeneity test to know whether the data the both classes have a homogeny varians or no and then the value of F_{table} with the significance α = 0.05.So, the value of F_{table} 0.05(30,38) is 1,75. F_{count} (1,16) < $F_{0.05\ (30,38)}$ (1,75), which means pretest has homogenous.

Posttest Data

Before test of hypothesis, the first is normality test with Liliefors test. Get are posttest score in 2 sample have normality data or $L_{table} < L_{table}$ in significant level 0.05 and n = 40.In experiment class has the normality $L_{count} = 0,0957 < L_{tabel} = 0,1582$, while the control class has the normality is $L_{count} = 0,1392 < L_{tabel} = 0,1582$.So, the result of normality test of posttest data in both classes normal.

The value of F_{table} 0.05(30,38) is 1,75. F_{count} (1,22) < $F_{0.05\ (30,38)}$(1,75) means posttest has homogenous variance. So, it can be conclude of homogeneity test , $F_{count} < F_{table}$ it's means that the 2 sample is homogeny.Hypothesis data testing is done using the t_{test} .T_{test} are used to determine the similarity of student ability both of classes. Hypothesis test is a requirement that used to determine whether the Ha in the research accepted or rejected. So the hypothesis data pretest in both classes has t_{table} = 1.991 obtained from the result interpolation table. Because $t_{count} < t_{table}$ (1.62 < 1,991) so, it can be conclude pretest data of both classes have the same level ability.

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Hypothesis testing is a requirement that is used to determine whether the Ho in the research accepted or rejected. The result data get have the different ability after treatment, because t_{table}= 1.991 obtained from the result interpolation table. Because $t_{count} > t_{table}$ (2.03 > 1.991) then H_0 is rejected and H_a accepted. Based on these criteria, it can be conclude that there is difference in student learning outcome score of students taught using group investigation and direct instruction model, so the result of learning outcome in class group investigation is significantly higher than class direct instruction.

Observation of students activity result showed percentage of students learning activity in learning Ecosystem topic that taught by group investigation model is more active that students learning activity that taught by direct instruction in SMA Negeri 11 Medan. The students learning activity more than active in experimental class than control class, because the percentage of experimental class 76.17% more active than control class 66.17 %.

DISCUSSION

According to the result learning outcomes of students in experiment class higher than student learning outcomes in control class. The increasing of students learning outcomes that taught by group investigation learning model is because the models have several advantages, according to Olivia (2008), the advantages of guided discovery learning model such as :1). It provides opportunities for more intensive investigation of a study or problem, 2) The strategy is conductive to developing student leadership in teaching the skill of discussion and group processes, 3) It enables the teacher to give more individual attention to teach pupil's learning needs, 4) It provides opportunities to develop respect for other students whose work helps the group progress in reaching its goals.

This was appropriate with result study that had been done by Mayasari (2011) that the research improve students learning outcome based on their score in doing test in every cycle The last cycle show the significant improvement of students' ability. Score from precycle was 57.71, and score from the second was 75. The result shows that the implementation of group investigation is improvement of learning tool, motivates students in doing work or jobs. The result also supported by the research from Dewi (2012) result showed the total score of experiment

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class was (78.13%) higher than control class (43.75%). The activeness of experiment class (71%) was more than control class (55%). In addition, the results Aristiana (2008) who conducted research on the junior high school 2 cape Hall, the expansion material is the average pretest score of 65.5 after learning by using a model of cooperative group investigation by using the average value posttest 80.

Based on the result, it can be concluded that the use of Group investigation learning model can improve the students' score and activeness on the learning process, where this model in completing the task group, each member of the group must work together and help each other to understand the subject matter so that more effective communication within the group. Solutions that can be taken is at the end of the lesson the teacher gives the evaluation of the working group and continue to motivate students to be able to cooperate well.

The implementation of group investigation is a general classroom organization plan in which students work in small groups using cooperative, group discussion, and cooperative planning and project (Sharan and Sharan, in Slavin, 1995). In this, students are actively involved during the class. Then they are to make report based on their given activity such as doing observation about the topic, environment investigation, etc. Later, each group is to present or display its findings to the entire class. At the initial stage, the teacher suggested objective and an overview of the Ecosystem, then give students worksheet to students. Students worksheet is organized in a systematic way in order to assist in understanding the principles or concept independently and train the students ability to think of the Ecosystem material. In this stages, students investigating and then discuss the result and answer the question contained in the students worksheet then the students put forward a new principle or concept.

Group Investigation has a strong foundation in John Dewey's philosophy of education where he believed that the students would have experienced meaningful learning if they have been exposed to the stages of scientific inquiry. So, this would help students "learn how to learn" (Sharan&Sharan, 1992). However, it is equally important to create a cooperative learning environment that involves interaction among students, interpretation of information and findings as well as intrinsic motivation where students are motivated to take

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an active role in determining what and how they will learn.

Group Investigation is an organizational medium for encouraging and guiding students' involvement in learning. According to Slavin (1995) Group Investigation is appropriate for integrated study projects that deal with the acquisition, analysis, and synthesis of information in order to solve a multifaceted problem. In this technique, the class is divided into several groups that study in a different phases of a general issue. The study issue is then divided into working sections among the members of the groups. Students pair up the information, arragement, analysis, planning, and integrate the data with the students in other groups. In this process, the teacher must be the leader of the class and ensure that students comprehend the explanation.

The teacher's general role is to make the students aware of resources that may be helpful while carrying out the investigation. Learning model group investigation showed satisfactory result, learners are usually passive in learning activities, become more active and more brave in asking or answering question from teacher and peers. Learners can enhance cooperation with the group during the learning activities, participate in discussion to solve the problem, responsible for carrying out practical tasks that it provides, presented the result of the working group, as well as the seriousness of the orderly carrying out evaluation tests. So, the cooperative learning model group investigation type with the team work priority is better than direct instruction.

CONCLUSION

The students learning outcome on ecosystem topic class X after give the treatment of Cooperative Learning Model Group Investigation is 88.75 and in control class with the treatment direct instruction is 77.9. So, the result of research showed that the result of learning outcome of students that taught by group investigation learning model is higher than students taught by direct instruction.Based on result of research toward learning outcome can be concluded t-test results obtained 2.03 t-test and t-table at 5% significance level of 1.991, then t-test > t-table. The results of this study indicate that there are significant the group investigation model against student learning outcomes on ecosystem topic.Students learning activity in learning ecosystem topic that taught by group investigation model is more active than students learning activity that taught by direct instruction in SMA NEGERI 11 Medan, it is show from the

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percentage of students activity in experimental class is higher than control class.

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