

THE EFFECT OF COOPERATIVE LEARNING MODEL USING SNOWBALL THROWING TYPE WITH SCIENTIFIC APPROACH TOWARD STUDENTS' LEARNING OUTCOMES

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Abstract: The study seeks to analyze the effect of cooperative learning model using snowball throwing type with scientific approach toward students' learning achievement in cognitive, affective and psychomotor aspects. The treatment that used in the study is cooperative learning model by using snowball throwing type with scientific approach in the learning process. The result showed that cooperative learning model by using snowball throwing type with scientific approach has positive influence toward students' learning outcomes in all three aspects. The average score of posttest in cognitive aspect of experiment class is higher than the score of posttest in control class. The result of hypothesis testing showed that the value of $t_{\text{count}} = 2,60$ and value of $t_{\text{table}} = 1,67$ ($t_{\text{count}} > t_{\text{table}}$). Then, the average score of affective aspect in experiment class is also higher than control class, with the value of $t_{\text{count}} = 6,9$ and the value of $t_{\text{table}} = 1,67$ ($t_{\text{count}} > t_{\text{table}}$). Thus, it can be concluded that cooperative learning model by snowball throwing type with scientific approach is effective to improve students' learning outcomes in term of cognitive, affective and psychomotor aspects. This learning model enable students to share their opinion individually or in groups, develop good characters of the students, involve the cognitive process that used to encourage students' intellectual especially in high order thinking while they are identifying, understanding, and overcome the problem, and then apply them in the learning process. Furthermore, it makes the learning process focused on students' centered. Thus, it will improve students' critical thinking skills.

Keywords: The effect; Cooperative Learning Model; Snowball Throwing; Scientific; Learning Outcomes.

INTRODUCTION

Education has important role in the process of generating intellectual people and educating human being. The educational process aims to improve the abilities, skills, development of attitudes, values of students (Shoimin, 2014). The excellent young generation is closely related to the role of good educators in the learning process. Teachers have important role to create good environment of the learning process that will develop students' insight. Students are expected to understand the material and then apply it in daily life.

In learning process, teacher acts as a learning resource, facilitator and motivator. A teacher must be able to arouse students' motivation in learning. Teachers have a big role in guiding students in terms of the development of knowledge, skills and attitudes of students. A teacher must be able to stimulate students' thinking to be more active and creative. This will affect students' developmental process. For this reason, teachers are required to have the ability to manage learning components well, so that the related functions between teaching components are formed by using appropriate learning strategies (Ngalimun, 2014). Inappropriate learning strategies will make students are lack of interest in learning that usually indicated by the decrease of student activity in the teaching and learning process. As a result, students will get low learning outcomes.

Based on the observation by using the data from students' biology score in private senior high school in Jambi, the average score of the students are 62,09 and 63,18. That score is lower than the criteria of minimum score. Therefore, teachers need to do some efforts in the learning process to improve students' activity and creativity. One of the efforts is using appropriate learning model in the learning process.

One of learning models that can stimulate student activity is by applying the Snowball Throwing learning model. Snowball Throwing is one type of cooperative learning model that gives individuals the opportunity to have an opinion, then combined in pairs, groups, and finally classically, to get review of all students in the class (Uno, 2011).

The choice of snowball throwing learning model is considered appropriate in motivating students in the learning process.

The implementation of cooperative learning model using snowball throwing will be more effective when it combines to scientific approach that develop students' activities such as observing, questioning, trying, reasoning, and communicating. Using scientific approach not only look at learning outcomes as the final product, but also as part of the learning process that seen as very important. By applying scientific approach, students are given the opportunity to experience themselves, follow a process, observe an object, analyze, prove and draw their own conclusions about situation happened. It develops students' character and involves potential cognitive processes on stimulating the development of students' intellectual, especially high order thinking skills in identifying, understanding, solving problems, and applying learning material. Thus, it will create student-centered learning.

MATERIAL AND METHOD

This study engages True-experiment research by using Posttest Only Control Design (Sugiyono, 2013). The subject of the research is all students in grade X of Senior High School PGRI (Indonesian Republic Teacher Association) 2 Jambi that consist of two classes. One class become experiment class and another one is control class. The students are taught by using Snowball Throwing type in cooperative learning model with scientific approach.

Data collection techniques in this study are test, self-questionnaire and peer-to-peer questionnaire evaluation sheets and observation sheets. The test is carried out by giving post-test questions after completing the learning process in experimental class and control class. Questionnaire sheet is held by giving a self-assessment sheet and peer evaluation after the learning process is finished. Observations were made during the learning process by the observer using observation sheet. Before doing the research, instruments were first analyzed in term of validity, reliability, distinguishing features, and difficulty level of questions (Arikunto, 2010; Purwanto, 2014).

The data that analyzed were posttest data results, self-evaluation questionnaire and peer-to-peer evaluation questionnaire sheets, and student psychomotor assessment observation sheets in experimental and control class. Data analysis techniques used 3 tests, such as normality test, homogeneity test, and hypothesis test (Sudjana, 2005).

RESULT AND DISCUSSION

The Analysis of Students' Learning Outcomes in Cognitive Aspect

The average scores in experimental and control class on cognitive aspects can be seen in Figure 1.

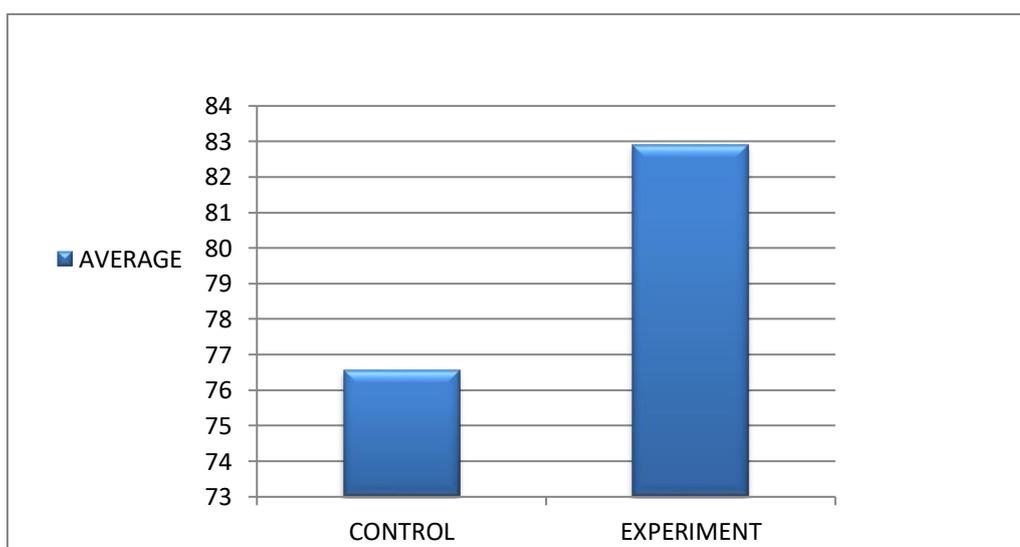


Figure 1. The average scores in experimental and control class on cognitive aspects

From the fig 1 above, the result of posttest in experiment class that given treatment by using Snowball Throwing with scientific approach in the topic of vertebrate obtained higher score (82,90) than the result in control class (76,56).

The Analysis of Students' Learning Outcomes in Affective Aspect

The average of questionnaire result in experimental and control class on affective aspects can be seen in Fig 2, as follows:

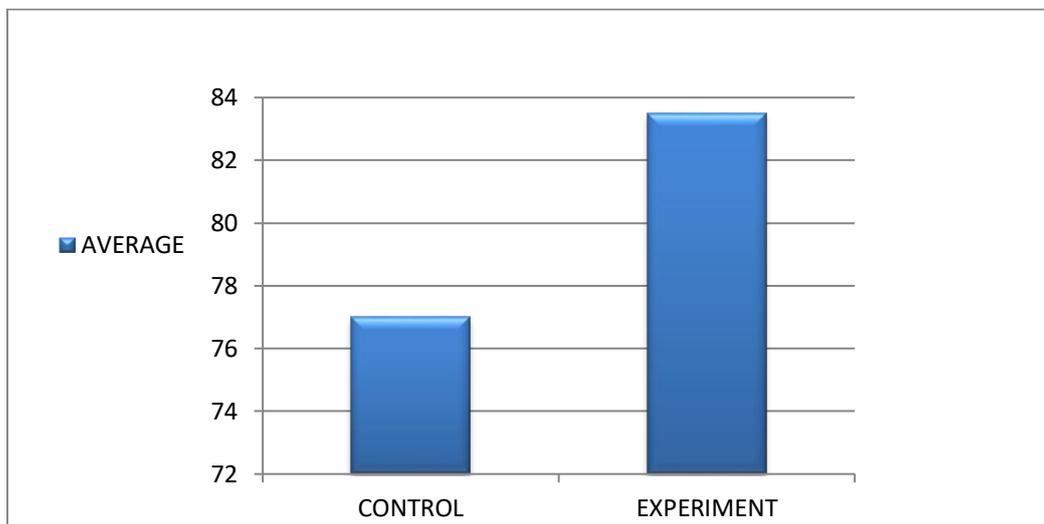


Figure 2. The average of questionnaire result in experimental and control class on affective aspects

Based on the figure above, the result of questionnaire in experiment class that given treatment by using Snowball Throwing with scientific approach in the topic of vertebrate obtained higher score (83,48) than the result in control class (77,01).

The Analysis of Students' Learning Outcomes in Psychomotor Aspect

The average of observation result in experimental and control class on psychomotor aspects can be seen in Figure 3 below.

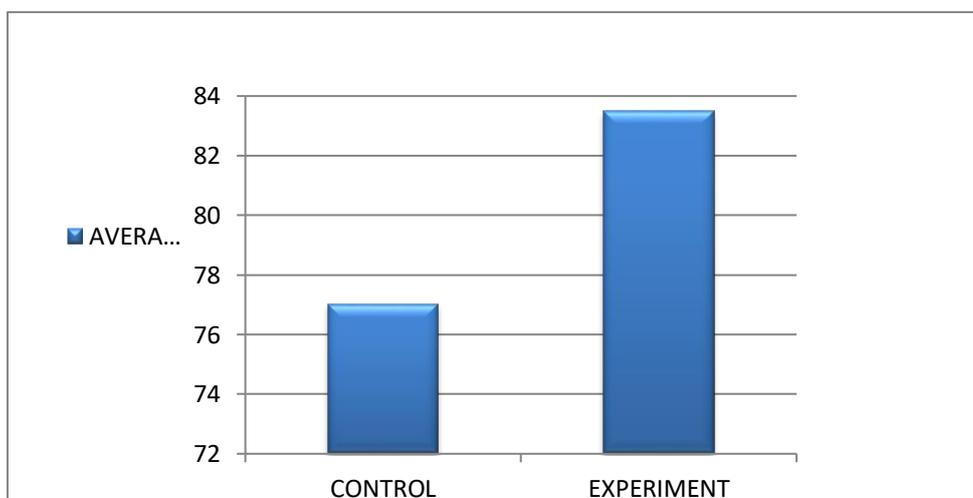


Figure 3. The average of observation result in experimental and control class on psychomotor aspects

From the data in fig 3, the result of questionnaire in experiment class that given treatment by using Snowball Throwing with scientific approach in the topic of vertebrate obtained higher score (82,41) than the result in control class (80,27).

Testing of the Analysis Requirements

In this study, the testing of the analysis requirements is carried out with normality test and homogeneity test to find out whether the data being tested is normally distributed or not.

Based on the calculation of the normality test, L count for experimental class is 0,019, while the L table with n 29 at a significance level of 0,05 is 0,173. Because L count is smaller than L table ($L_{\text{count}} < L_{\text{table}}$), it means that posttest results of experimental class students were normally distributed. While in control class, the value of $L_{\text{count}} = 0,061$ and L_{count} with n = 33 at a significance level of 0,05 is 0,154. Because L count is smaller than L table ($L_{\text{count}} < L_{\text{table}}$), it means that control class has normal distribution.

Homogeneity test in this study used F-test. The results obtained is ($F_{\text{count}} = 0,14$ and $F_{\text{table}} = 1,87$). Thus, both classes have $F_{\text{count}} < F_{\text{table}}$ at a significance level of 0.05. This shows that both groups have homogeneous variance at a significant level of 0.05.

Hypothesis Testing

Based on the hypothesis test carried out in cognitive aspect, it gained $t_{\text{count}} > t_{\text{table}}$ that is $2,6 > 1,67$ which means that H_1 is accepted. Based on the result of hypothesis testing, the null hypothesis is rejected, so it can be seen that the hypothesis is accepted that Snowball Throwing learning model with scientific approach influences students' learning outcomes in cognitive aspect of Biology lesson in the topic of vertebrate.

Next, in affective aspect, it gained $t_{\text{count}} > t_{\text{table}}$ that is $6,9 > 1,67$ which means that H_1 is accepted. Based on the result of hypothesis testing, the null hypothesis is rejected, so it can be seen that the hypothesis is accepted that Snowball Throwing learning model with scientific approach influences students' learning outcomes in affective aspect of Biology lesson in the topic of vertebrate.

While in psychomotor aspect, it gained $t_{\text{count}} > t_{\text{table}}$ that is $2,0 > 1,67$ which means that H_1 is accepted. Based on the result of hypothesis testing, the null hypothesis is rejected, so it can be seen that the hypothesis is accepted that Snowball Throwing learning model with scientific approach influences students' learning outcomes in psychomotor aspect of Biology lesson in the topic of vertebrate.

Discussion

Based on the findings, in cognitive aspect, there is a distinction in the average score of students' learning outcomes that used snowball throwing model with the average score of students' learning outcomes that used direct models. The difference shows that cognitive aspect of students who learn with the Snowball Throwing learning model are better than students who learn by using the direct learning model. This is because, when the discussion activities are carried out, students in control class are less active. They are not given the opportunity to explore and search for information that carried out in the discussion. In contrast to the experimental class, students are required to know about the material being studied. Students are told to look for information through books or the internet before the discussion, so students are more active in learning. Learning with scientific approach develop students' character, involve potential cognitive processes in stimulating the development of students' intellectual, especially students' high-level thinking skills in identifying, understanding, solving problems, and applying learning material, so that it will create student-centered learning (Daryanto, 2014).

In addition, using Snowball Throwing model can improve students' attitude and affective aspect. Likewise with the results of students' affective aspect in experimental class is higher than control class. In experimental class, the learning process is more enthusiastic than control class. At the beginning of questionnaire assessment, students do self-evaluation and peers evaluation objectively, so learning outcomes obtained are significantly different. Researchers also use scientific approach while learning process and guide students to fill out self-assessment sheets

and peer-assessment. This is also proven by the average score of affective aspect in experimental class that is 83,48, which higher than control class that is 77,01.

Furthermore, the assessment of psychomotor learning outcomes is not only seen from the students' skills when using a microscope during observation but also from students' skills assessment while having discussion to the researchers and friends in the classroom. It seen from how students discuss the results, draw conclusions and present observations. The assessment also looks at students' readiness to receive lessons and sees students' understanding in practicum steps while doing the activity.

Learning by using Snowball Throwing model improves students' abilities in cognitive, affective and psychomotor aspects. It is in line with the basic principles possessed by the Snowball Throwing model characters, that are: 1) The atmosphere in learning becomes more fun because students like to throw paper balls to other students; 2) Students get the opportunity to develop thinking skills because they are given the opportunity to develop the abilities of other students; 3) Making students ready with various possibilities because students do not know what their friends are like; 4) Students are actively involved in learning; and 5) Educators are not too busy making media because students engage directly in practice (Huda, 2014). Therefore teachers need to make new innovations in learning. One of them teachers can develop the use of learning models that are able to support or be able to increase student activity and also student learning outcomes. Using the snowball throwing model, making students ready with various possibilities and cognitive, affective, and psychomotor aspects can be achieved (Hamdayama, 2014; Isjoni, 2011).

CONCLUSION

Based on the findings and discussion, it can be concluded that cooperative learning model by using snowball throwing type with scientific approach has positive influence toward students' outcomes of Biology lesson in grade X students of SMA PGRI Jambi in term of cognitive, affective and psychomotor aspects.

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