The Influence of Jigsaw Learning Model on the Ability of Resolution Natural Science of Middle East Junior High School Students Indonesia

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ABSTRACT
The purpose of this research is to know the influence of jigsaw learning model on the ability of problem solving of Natural Science. The research method used is experiment method. Samples were taken as many as 60 students with 30 control class students and 30 students of experimental class. Data collection was done by direct questionnaire to sample. Data analysis uses descriptive statistics such as searching for mean, median, mode, standard deviation, and inferential statistics to find coefficients. The results showed: There is influence of jigsaw learning model to the ability of problem solving of Natural Science.

Introduction

Natural Science is an extensive human knowledge gained by means of systematic observation and experimentation, and is explained with the help of rules, laws, principles, theories and hypotheses. Natural Science Learning should be properly implemented to foster the ability to think, work and be scientific and communicate it as an important aspect of Life Skills. Based on research conducted by S. Kirno (2010), the reality of the field shows that in the learning of Natural Sciences students tend to be less active and creative in learning, because the technique given by the teacher is memorize recorded from teacher explanation and from book and less involving real learning resource. In addition, the strategy used by teachers in learning is still conventional, teacher centered that tend to be authoritarian and does not stimulate student learning

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activities optimally. Although teachers have been creative using cooperative or group learning methods but still allow some students not actively involved in the learning process, still tend not to focus on following the learning process.

Most of the students are less active and the learning interest of Natural Science is still low. Students do not have high learning motivation, low curiosity, lack of courage to express opinions, not yet accustomed to applying the knowledge and skills gained in school in daily life, the atmosphere of learning activities of Natural Science in schools has not given optimum meaning for students, Not yet have high problem solving ability. Problem solving is an investigative activity in which the solver develops a solution to solve a problem (Selcuk, 2008). Problem solving is an important aspect of science education. Solving science problems is an important aspect of schooling because problem solving is used to teach students to apply the science knowledge and abilities they gain in the learning process (Portoles and Sanjose, 2008). On the subject of Natural Sciences problem solving can improve the ability to think critically, logically and systematically. The same is stated by G. Muhsetyo, (2007) The benefits of experience solving problems, among others, are students: (1) creative in thinking; (2) critical in analyzing data, facts and information; (3) independent in acting and working ". In addition, with problem solving will foster student's creative attitude in Natural Science learning. In solving problems, students are required to have the ability to create new ideas or ways of dealing with the problems it faces. Therefore, students have a very open opportunity to develop and improve thinking skills through the resolution of various issues.

From the problems presented above teachers need to develop a student-centered learning model, involving students actively, fun and happen the physical and mental activities of students because children will think during doing, learn to dig his mind to solve problems / problems in learning. The appropriate learning model in this case is the cooperative learning type jigsaw model. In this type of cooperative learning model Jigsaw students are grouped into 4 team members. Each person on the team is given a different piece of material. Members of different teams will meet in new groups (expert teams) to discuss their problems. After discussions with the expert team, each member returned to the original group and took turns teaching their teammates and other members to listen. Each team of experts presents the results of the discussion and the teacher gives an evaluation.

Jigsaw type cooperative learning is one type of cooperative learning model that encourages students to actively and assist each other in mastering the subject matter. In jigsaw type learning each student learns something that is combined with material that has been learned by other students. A. Lie (2006) says that: The technique of teaching jigsaw was developed by Anderson et al. As cooperative learning method. In this model the teacher looks at the schematic or background of the student experience and helps students activate the schemata so that the lesson material becomes more meaningful. In addition, students work with fellow students in an atmosphere of mutual assistance and have many opportunities to process information and improve communication skills.

Jigsaw is designed to enhance students' sense of responsibility for their own learning and others. Students not only learn the material provided, but also must be ready to give and teach the material to other members of the group.

Thus, students are interdependent with each other and must work together to study the assigned material. According to A. Suprijono (2009) jigsaw learning is a cooperative learning where teachers divide the class into smaller groups. The number of groups depends on the concepts contained in the topics being studied. If one class has 40 students, then each group has 10 members. The four groups were called origin groups, after the origin groups formed teachers distributing textual material to each group. Next form a group of experts, give the opportunity to discuss afterwards back to the origin group and explain the results of the discussion to each group.

Cooperative Learning Type Jigsaw is a cooperative learning technique where students, not teachers, have greater responsibilities in implementing learning. Jigsaw model developed by Slavin which emphasizes the existence of activities and interactions among students to motivate each other and help each other in mastering the subject matter to achieve maximum performance. In the learning process, cooperative learning with Jigsaw model through five stages namely; (1) the presentation of the material, 2) group activities, 3) individual tests, 4) the calculation of individual development scores, and 5) award group (Isjoni, 2007) Jigsaw (Expert team model) has the steps: 1) Students are grouped into 4 team members, 2) Each person on the team is given a different piece of material, 3) Each person on the team is assigned a part of the assigned material, 4) Members of different teams who have studied the same section / sub-section meet in new groups (groups experts) to discuss their sub-chapters, 5) After the discussion as a team of experts each member returns to the original group and takes turns teaching their teammates about the sub-chapters they master and each member listens intently, 6) Each team of experts Presenting the results of the discussion, 7) Teacher gives evaluation, 8) Conclusion.

Method

The method used in this research is experimental method. This method provides a description of the variables that will be studied and investigate the relationship between variables, among them is the relationship between the variables use Model Jigsaw Type Learning with the ability of solving problems Natural Science students. The method in this research used experiment method with ANOVA analysis technique. In this study there are experimental treatments by forming two groups consisting of one experimental class group and one control class group as a comparison. In the control class was given the treatment of the teacher's usual learning model (group discussion) and experimental class given the use of learning model jigsaw learning type cooperative. Population in this research is student of class VII of Junior High School of academic year 2016/2017. The sample is part of the number of characteristics possessed by the population (Sugiono, 2013). According S. Arikunto (2010) the sample is a partial or representative population studied, intended to generalize the results of research samples. The sample in this study, ie students who are members of the population of the two schools that are populated in the First High School 258 Jakarta in the select students randomly from class VII as the experimental class and for the class of control were selected students of class VII randomly from the First High School 147 Jakarta.

Results

Of the 30 students sampled were treated with control class, the lowest score was obtained 56, the highest score was 91, the average score was 74.33, the median was 73.50, the mode was 71 and the standard deviation was 10.114. Of the 30 students who were sampled were treated by using Jigsaw learning model, the lowest score was obtained from 51, the highest score was 81, the average score was 64.30, the median was 63,50 mode 56 and the standard deviation was 8,991. Analysis result using ANOVA are:

Table 1. Table Anova.

Tests of Between-Subjects Effects

Dependent Variable: Kemampuan_pemecahan_mslh_IPA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3028,400ᵃ	3	1009,467	13,726	,000
Intercept	281261,067	1	281261,067	3824,327	,000
Model_Pembelajaran	1041,667	1	1041,667	14,164	,000
Error	4118,533	56	73,545		
Total	288408,000	60			
Corrected Total	7146,933	59			
a. R Squared = ,424 (Adjusted R Squared = ,393)					

Based on the above table, students' natural science problem solving skills using the jigsaw learning model from the calculation were sig = 0,000 <0,05 and F arithmetic = 14,164, F table = 4.02, It has the meaning that the use of learning model has influence To the problem solving ability of natural science. The jigsaw learning model has a positive impact and can improve the problem solving skills of junior high school students in south Jakarta.

Discussion

From the results of the study showed that the use of learning model learning model of natural sciences between jigsaw learning model and group jigsaw obtained F_{count} = 14,164. F_{table} = 4.02. Thus the first hypothesis is tested for its significant and acceptable truth. So it can be concluded that there are significant differences in the use of learning models and group jigsaw on the ability of solving problems science natural sciences. The average problem solving skills of science natural sciences are taught by using higher than natural knowledge knowledge taught by using the group's jigsaw learning model.

Type Jigsaw Learning is a cooperative learning technique where students, not teachers, have greater responsibilities in implementing learning. Jigsaw model developed by Slavin which emphasizes the existence of activities and interactions among students to motivate each other and help each other in mastering the subject matter to achieve maximum performance. While the process of learning with group discussion has a weakness that is: the course of discussion will be more often dominated by clever students. The course of discussion is often influenced by conversations that deviate from the topic of discussion of the problem, so the discussion widened everywhere. Discussion usually wasted more time, so it is not in line with the principle of efficiency.

Problem solving abilities in science natural sciences, requires readiness, creativity, knowledge, and abilities and applications in everyday life. In

addition, the problem solving ability is a problem that has not been known and contain understanding as a process of high thinking and important in learning science natural science. Problem solving science natural science is a very important part because in the learning process of science natural science and its completion, the student is possible Gain experience using existing knowledge and skills to apply to the problem-solving process. Problem solving is an important aspect in the learning process of science natural science. Ability Problem solving is generally described by formulating a new solution that goes from previously learned knowledge to creating a solution. The process of learning model type jigsaw in the design to improve the sense of responsibility of students to their own learning and others. Students not only learn the material provided, but also must be ready to give and teach the material to other members of the group. Thus, students are interdependent with each other and must work together to study the assigned material, whereas in group discussions still provide opportunities for inactive students, who are active only the clever.

Based on the theory, the use of the right learning model can make students more creative. This is consistent with what Rohman expressed that. Thus will create a lesson that emphasizes the empowerment of students actively. Learning not only emphasizes the mastery of knowledge (logos), but rather on the internalization emphasis on what is learned, so that it is formed and functioned as the possession of a useful student in his life (ethos).

Conclusion

In this conclusion, the authors describe briefly the results of research obtained in the field. After conducted research and data analysis about Influence of learning model and Independence of learning To ability of problem solving science natural science Student can be drawn conclusion as follows: There is influence of learning model which is significant to ability of problem solving problem science natural science. It can be seen from the value of F count = 14,164 from F table = 4.02. This suggests that the jigsaw learning model is better used than the group discussion learning model in improving the problem solving skills of students' science natural science.

Suggestion

At the end of this thesis writing, the author wants to provide suggestions that hopefully can be useful for many audiences, namely: Teachers should pay attention to the learning model in improving the problem solving skills science natural science.

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