The Influence Of Two Stay Two Stray (TS-TS) Cooperative Model On Problem Solving Ability

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Abstract. The purpose of this research is to know whether there is an influence of cooperative model type Two Stay Two Stray (TS-TS) on problem-solving abilities on the subject of ecosystem class VII at junior high school. This type of research is Quasi-Experimental Design research. The technique of collecting data using a test, test in the form of description is 7 problem. Data analysis techniques to see problem-solving ability using normality test, homogeneity test, and t-test (t-test). The result of this research is the average value of post-test in the experimental class 73,71 and the control class 60,86, for the mean value per indicator that is in the experimental class of the indicator understand the problem (49,71), prepare the problem-solving plan (11.80) and implementing a problem-solving plan (12,19). While in the control class the indicator understands the problem (36,43), prepares the problem-solving plan (11,38), and implements the problem-solving plan (13,04). To test the hypothesis obtained t-count (4,5395)> t-table (1.6801). Thus there is influence of Two Stay Two Stray (TS-TS) cooperative model on problemsolving ability on VII classroom SMPN 2 Sembalun Bumbung Academic Year 2016/2017.

1. Introduction

Improving Education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential, to have spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, society, nation, and country. Through the education process also a nation tries to achieve certain goals planned[1]. Law No.20 of 2003 the purpose of education is clearly stated in the National Education System, which is to develop the potential of students to become human beings who believe and fear God who is supreme, virtuous, healthy, knowledgeable, competent, creative, independent, and become democratic and responsible citizens[2].

The TS-TS model is a group learning system with the aim that students can work together, be responsible, and encourage one another to excel. This model also trains students to socialize [3]–[5]. Learning the ability to solve problems is included in the ability to think at a high level (high order thinking skill)[6]–[8], therefore the purpose of education is not only to increase the acquisition of knowledge but must be able to develop the ability to problems because solving problems is the highest mental activity[9], [10].

Based on the results of preliminary observations made at SMPN 2 Sembalun Bumbung, the school revealed that it turns out that in the learning process in class, the methods used by teachers are quite varied, whereas, in biology subjects the delivery of subject matter to teachers is still dominated by the use of lecture methods, as a result, the classroom atmosphere tends to be teacher-centered which causes students to be passive and only receive feedback from the teacher. In this case, students are not taught how to ask questions or opinions creatively during the teaching and learning process as well as the lack of understanding of students about the concept of biology, even though these aspects
are the key to success in learning. According to the biology teacher who was interviewed the cause of the often occurrence of incompleteness in the teaching and learning process is the lack of motivation of students towards biology subjects. Some students interviewed said that often the way to teach biology teachers in class was very boring, made sleepy, and difficult to understand, most students assumed that biology was a difficult subject, a boring lesson, identical with a lot of material and very boring without any connection with everyday life. This is because it still uses the conventional method of lecturing and taking notes. Learning with these methods shows that there is a mismatch of teaching methods with subject matter that causes boredom in students and results in the low motivation of students so that it hurts student learning outcomes.

The formulation of the problem in this study is whether there is an influence of the Two Stay Two Stray (TS-TS) type cooperative model on the ability to solve problems on the subject of ecosystem class VII in SMPN 2 Sembalun Bumbung in the 2016/2017 Academic Year?

The purpose of this study was to determine the effect of the Two Stay Two Stray (TS-TS) type cooperative model on the ability to solve problems on the subject of ecosystem class VII at SMPN 2 Sembalun Bumbung in the 2016/2017 Academic Year.

This research will provide information about the learning of the Two Stay Two Stray (TS-TS) model and the ability to solve problems. The benefits obtained from this research are expected to be used as input or alternatives for teachers and prospective teachers in applying various teaching models to improve the quality of learning.

2. Method

This type of research used in this study is experimental research. The experiment is research that tries to find the influence of certain variables on other variables under controlled conditions. This research uses Quasi-Experimental. Quasi-Experimental Design is a design that has a control group but cannot function fully to control external variables that influence the conduct of an experiment (Sugiyono, 2015: 114). The design used is the Posttest Only Control Design. In this design, both classes were given a post-test after the end of the study.

The subject of this study was limited to VII grade students of SMPN 2 Sembalun Bumbung which consisted of 2 classes with 48 students and were taken as research samples. In research the sampling is done by a simple random sampling technique, that is taking sample members from the population is done randomly without regard to strata in the population [11]–[13]. The research sample used in this study is class VIIA, amounting to 25 people as an experimental class and class VIIB, totaling 23 people as a control class.

Data collection techniques used in this study were test techniques. The instrument that was given to students was in the form of a description test of 8 questions to measure students’ problem-solving abilities on the subject of the Influence of Human Population Density on the Environment. Each problem contains an indicator to solve a problem that is an indicator of understanding the problem, an indicator compiling a solution plan the problem, and indicators implement the problem-solving plan. Data collected through the results of the post-test were tested using a prerequisite test that is normality test, homogeneity test, average, and t-test.

3. Results and Discussion

This The data in this study are the ability to solve problems on the subject of ecosystems obtained after students are taught by using the Two Stay Two Stray (TS-TS) type of cooperative model and the conventional method (lecture) at SMPN 2 Sembalun Bumbung. The results obtained from the post-test of experimental and control class students obtained from the results of the study are presented in table 1.

| Class | Amount of Data | Highest Value | Lowest Value | Average | Standard Deviation |
|-------|----------------|---------------|--------------|---------|-------------------|

Table 1. Description of Post-Test Results Data
Based on the results of the study, it is known that there is an influence of the Two Stay Two Stray (TS-TS) type cooperative model on the ability to solve problems on the subject of ecosystem class VII in SMPN 2 Sembalun Bumbung in the 2016/2017 Academic Year. This influence can occur because each stage in the Two Stay Two Stray (TS-TS) model supports the development of thinking skills in solving problems. The results of the data obtained, after being given treatment in both the experimental class and the control class. Where the control class is given treatment by the method (lecture), students tend to be passive while the teacher plays an active role in the class. While the experimental class was taught with the Two Stay Two Stray (TS-TS) model. The steps of the Two Stay Two Stray (TS-TS) learning model activities are as follows: (1) The teacher guides the students to form their groups. (2) The teacher divides the worksheet in each group. (3) The teacher guides students in discussing solving problems with their respective groups. (4) The teacher asks two students to go to another group and two people stay. (5) The teacher asks two people who live in groups to explain the results of the discussion with two groups of guests. (6) The teacher asks students to return to their respective groups after a visit. (7) The teacher asks each group to match and discuss their work. (8) The teacher asks each group to present their work. Whereas the teacher only acts as a facilitator to direct students. This influence can occur because of each stage in the Two Stay Two Stray (TS-TS) model that supports the development of students' problem-solving skills.

The results of the analysis of problem-solving skills for each indicator in the experimental class can be seen in the difference from the average value of each indicator by using the Two Stay Two Stray (TS-TS) model. The elaboration on each indicator of the ability to solve problems can be described as follows:

In the experimental class, it can be seen that the first problem-solving ability indicator is understanding the problem, the average value of each indicator is 49.71 after being applied with the Two Stay Two Stray (TS-TS) model. This is because some students understand the material provided and understand the problems that exist in the problem. so students can answer the questions correctly.

The second indicator of problem-solving ability is to prepare a problem-solving plan, the average value of each indicator is 11.80 after applying the Two Stay Two Stray (TS-TS) model. This is
because students are required to think of answers to questions given to be able to solve a problem. Students as actors in this learning process actively process information received in the learning activities process. The activeness of students in the learning process creates interaction between the teacher and students on the subject matter.

The third indicator of problem-solving ability is carrying out a problem-solving plan, the average value of each indicator is 12.19 after being applied with the Two Stay Two Stray (TS-TS) model. This is because students during the discussion students are asked to work together to answer questions with their groups to solve problems.

When compared with the control class using the conventional method (lecture), when seen from the average value of each indicator in the control class that is the indicator of understanding the problem, the average value of 36.43. The second indicator is to arrange a problem-solving plan, the average value of 11.38. The last indicator is implementing a problem-solving plan, the average value of 13.04. This is because in the control class every aspect of the indicator is not like the experimental class that is treated using the Two Stay Two Stray (TS-TS) model where students are directly involved in group discussions to discuss questions or problems concerning learning material in solving a problem. The problem. And also the lack of opportunities for students to play a more active role in the learning process. Students tend to only listen to the explanation given by the teacher, and students feel bored and bored in following the learning process. Most students are also less active or lack the courage to express their opinions directly to the teacher. So that students' willingness to find out about a theory tends to be lacking. So the average value for each indicator the ability to solve problems in the experimental class is higher than the control class.

After going through some of the analysis above then proceed with the hypothesis test using a t-test at a significance level of 5%. From the calculation results obtained that the price, t count is greater than t table (t count> t table). Thus there is the influence of the Two Stay Two Stray (TS-TS) type cooperative model on the ability to solve problems on the subject of ecosystem class VII in SMPN 2 Sembalun Bumbung for the 2016/2017 Academic Year 'acceptable'.

The results of this study are in line with the results of previous studies conducted by showing that the average mathematical problem-solving ability of students taught through the Two Stay Two Stray (TSTS) cooperative learning model is higher than the average students' mathematical problem-solving abilities are taught through conventional methods[14], [15]

4. Conclusions

Based on the predetermined problem formulation, a conclusion is proposed that there is an influence of the Two Stay Two Stray (TS-TS) type of cooperative model on the ability to solve problems in the subject of ecosystem class VII of SMPN 2 Sembalun Bumbung in the 2016/2017 Academic Year. This can be seen from the average value of problem-solving skills in the experimental class is higher than the control class. The average value of indicators in the experimental class is an indicator of understanding the problem (49.71), compiling a problem-solving plan (11.80), and implementing a problem-solving plan (12.19). Whereas in the control class indicators understand the problem (36.43), draw up a problem-solving plan (11.38), and implement a problem-solving plan (13.04). It also looks at the results of the calculation of hypothesis testing which shows that the price of t count ≥ t table is t count (4.5395) ≥ t table (1.6801). Where t table is calculated with a significant level of 5% is 1.6801, then Ha is accepted and H0 is rejected. 

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