The Effect of Cooperative Learning Two Stay Two Stray on Students Learning Outcomes in Surface Area

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Abstract
The study aimed to determine the influence of Two Stay Two Stray cooperative learning outcomes in surface area concepts. The method used in this study was an experimental method with a quasi-experimental form and the research design was a posttest only control design. The population of this research was 9th-grade students of 18 junior high schools in Pontianak and were divided into five classes. The sample was 9th D and 9th E grade taken using a simple random sampling technique. Data collection techniques used measurement techniques and data collection tools with a description test to determine student learning outcomes. After the data were tested in the two samples, data analysis performed to test the hypothesis. Before testing the hypothesis, the prerequisite test was the normality test. The normality test was not normal then the data analysis used Mann Whitney U-Test. From the data analysis results, obtained z count value of 1,87, while the z table value of 1,64 for α = 0.05. Because of the z count > z table, it is concluded that there is an influence of Two Stay Two Stray cooperative learning on student learning outcomes.

Keywords: Cooperative Learning, Surface Area, Two Stay Two Stray

INTRODUCTION
Learning cannot be separated in our daily life, likewise with education, which is an essential aspect of human life in developing a nation. The importance of education is also stated in article 31 of the 1945 Constitution, which states that every citizen has the right to have an education. The government strives and provides education to educate the nation (Lukita, 2017).

Mathematics is a science that deals with numbers and are closely related to counting (Perwitasari, 2014). Mathematics learning in schools should involve various learning models that can help in learning activities to feel interested in taking lessons in class. The reality in the learning field that teachers do in mathematics at school is still rarely associated with society’s reality of social life. It has human values. So that learning takes place.

It tends to be oriented to textbooks only so that the results are less meaningful for students’ social life. For students to gain social experiences, learning that is carried out should seek to foster
interaction between all students sharing and complementing each other so that the learning knowledge obtained results from shared thinking (Johnson, 2013).

To determine the conditions in the field, researchers conducted direct observations of the learning process in the classroom carried out by the class IX mathematics teacher. This observation showed that learning activities begin with the teacher's explanation of the material being studied. In explaining the material, the teacher used the lecture method. Furthermore, the teacher also provided sample questions and exercises about the material being studied to test students' understanding. Through observation, it can be seen that there are still many students who have difficulty starting the completion. Students often wait for teacher instructions when starting to solve questions.

In solving math problems, students are less empowered to learn mathematics. It is also indicated that teachers in teaching mathematics do not involve students' mathematical problem-solving abilities. It can be seen from the textbooks used by the teacher that do not require the ability of students to re-check the answers to questions that are part of solving mathematical problems (Lestari, 2014).

Furthermore, researchers also conducted interviews with class IX mathematics teachers. The interview results obtained information that students' ability in determining the surface area of a room is still low. This fact is assessed from the value of daily tests, especially in the tube and cone shape. Students also often experienced difficulties determining the surface area of tubes and cones, even though the teacher's learning always provides examples of various questions on the questions themselves and problem-solving.

In accordance with this situation, it is hoped that efforts to overcome this problem by carrying out interesting learning so that learning is successful. According to Nurhussain (2017), Two Stay Two Stray cooperative learning involves students taking an active role in learning activities. Thus, it requires teachers to make new creations to be active and interested in participating in classroom learning.

The teacher who acts as a facilitator motivates the students so that their potential can be maximized. One of them is the Two Stay Two Stray cooperative learning, which can help students be motivated and develop their activeness. It causes students to be responsible for themselves or the group for the learning they do. This learning can also provide space for students to be creative and build students' skills to think critically.

Indriyani (2011) stated that the Two Stay Two Stray cooperative learning is one lesson that can make students happy and active when learning. According to Amar (2012) stated that Two Stay Two Stray can share information and results previously owned with other groups. In that case, a group with other groups can share the necessary information.

Two Stay Two Stray cooperative learning is carried out in groups with one group of four people in its activities. Two students in each group are in charge of visiting other groups as guests. The purpose of visiting other groups is to get information and opinions from different groups regarding the material being studied. Both guests should note important or missing data in their group related to the material being studied. This visiting activity can be done by each group a maximum of two times.

Then some students are assigned to live in groups. The remaining students' task is to share the work results and information produced by the group itself with guests from other groups about the material that has been studied. Then students try to provide explanations according to their knowledge of the material studied to their guests. Each student who stays should serve their guests well, that is, answer any questions or information that the students who visit their groups want to know.

Two Stay Two Stray learning in this study was carried out in 4 steps, namely (1) group discussion, (2) visiting and staying, (3) discussion, and (4) concluding (Lie, 2010). Before the learning activity begins, the teacher delivered information and learning objectives regarding Two Stay Two Stray cooperative learning in surface area concepts.

Two Stay Two Stray cooperative learning teaches students to be creative in finding various information related to the subject matter for their group from the learning steps that have been disclosed. It can also be seen that this model teaches positive qualities for students, namely
cooperation, mutual giving, and being willing to accept, and the habit of not being ashamed to ask questions if they have difficulty learning a subject matter. Besides, students automatically begin to be accustomed to doing peer tutoring activities, even though the language is still simple. Therefore, students' information and knowledge can grow and can be mastered about learning topics to improve learning outcomes (Fitriyah, 2012).

Two Stay Two Stray cooperative learning matches the characteristics of students at SMP Negeri 18 Pontianak. They are used to discussing and sharing with their peers to apply the habit of discussion and sharing in Two Stay Two Stary cooperative learning. Besides, students are also familiar with using material text or worksheets not to experience problems with the text of the material to be used in learning activities. The material studied also supports learning activities because it is suitable to be delivered using Two Stay Two Stray cooperative learning. Thus, the application of Two Stay Two Stray cooperative learning, which will be used as a treatment in this study, has an excellent opportunity to improve student learning outcomes because it is in accordance with student learning habits and matches the material to be studied.

According to Lie (2010), Two Stay Two Stray cooperative learning is suitable for elementary and junior high school students because the learning activities involve activities that students usually do daily, namely visiting and receiving guests. Two Stay Two Stray cooperative learning will make the learning atmosphere active, creative, and not boring. Manik (2016) stated that Two Stay Two Stray cooperative learning has the following advantages:

1. Two Stay Two Stray cooperative learning can be applied to various classes or age levels.
2. Learning will be more meaningful so that students can find concepts that they find for themselves.
3. All students have assignments assigned to each group to make students active in Two Stay Two Stray cooperative learning activities.
4. In using Two Stay Two Stray cooperative learning, the teacher can motivate students in learning. It can be seen when students exchange information with one another.
5. Students appear to be active during the learning process, and all group members are required to report the results of the visit to other groups visiting in their group. The results obtained when visiting can provide strength for students to remember subject matter that will affect student learning outcomes.
6. Students who remain in their groups can increase their creativity, for example, when they present their group work to guests when visiting their group.
7. When students compare the results of their group's work with the work of other groups, it means that the teacher has provided opportunities for students so that their critical thinking skills can be improved by seeing the work of other friends and their group's work.
8. Using Two Stay Two Stray cooperative learning can help teachers when conveying information about ongoing lessons. Learning by getting staff in the form of peer tutors when a group member exchanges information, confirms, presentations, and asks other group members.

This study is different from previous research, which only visited and stayed and only got the information without a strong understanding of the subject matter. In addition to using Two Stay Two Stray cooperative learning, this study also uses teaching materials in the form of learning videos that are displayed in the classroom. The learning videos and material texts were made to attract students' interest in learning during the teaching and learning process. With this, students can learn with their sense of hearing and sense of sight simultaneously.

Teaching materials that are currently being developed can help teachers when learning takes place. Arsyad (2011) states that with an argument in the form of a tube space, 75% of one's learning is obtained by seeing using the eyes, 13% by using the ears, and the rest 12% through other senses. Learning by using the two senses simultaneously, such as sight and hearing, can benefit students.

**METHOD**

The method used in this research was an experimental method with a quasi-experimental form. The quasi-experimental form was used because the researcher cannot control and manipulate all
the relevant variables as actual experimental research. In educational research, it is often difficult to control or manipulate all the relevant variables in this study (Sugiyono, 2017).

The design used in the study was Posttest-Only Control Design, namely a one-time test design for two groups. Measurements were made after the treatment is given. The design has two classes, namely the experimental group and the control group. The experimental group was a group that is given Two Stay Two Stray cooperative learning, while the control group was a group that is given conventional learning. The research design can be seen in the table below.

Table 1. Posttest-Only Control Group Design

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>Control</td>
<td>-</td>
<td>O</td>
</tr>
</tbody>
</table>

(Sugiyono, 2017)

X = Two Stay Two Stray Learning
O = Posttest

In this study, the population selected were all IX grade students of SMP Negeri 18 Pontianak in the 2018/2019 academic year, which were spread into five classes. The research sample was two classes of IX grade at SMP Negeri 18 Pontianak from five classes available. Because there were five classes of IX grade at SMP Negeri 18 Pontianak, the simple random sampling technique was used in selecting the sample. It was conducted because the placement of smart, medium, and poor students in each class was evenly distributed. The experimental group and the control group were selected randomly from the five available classes. From the results, 33 students of IX D were selected as the experimental class, and 36 students as the control class in class IX E.

The researcher used measurement techniques. The measurement technique was used to obtain data about student learning outcomes after using Two Stay Two Stray cooperative learning. In this study, the data collection tool was a learning outcome test in the form of an essay test, which consisted of 4 questions. The essay test used was in line with Rochmiyati's (2019) opinion, which stated through the essay test, students can express answers and have varying levels of truth or error, thus reducing the possibility of students guessing an answer to the question. The essay test was used to test students in working on items.

The steps for getting a good test are:
1. Test grid based on curriculum and syllabus.
2. Arrange the tests according to the grid.
3. Instrument analysis (Purwanto, 2011)

The indicator on the grid is the basis for making questions. Formulating indicators is also one of the activities to compile a syllabus. According to Purwanto (2011), a good indicator has the following requirements:
1. Each KD will have more than one appropriate indicator.
2. Use the appropriate operational words.
3. Using an operational verb used as a guide in making objective questions and using more than one operational word in the problem description.

Indicators of students in solving problems on the surface area are (1) the ability of students to understand the given problems, (2) the ability of students to plan problem solving, (3) the ability of students to solve problems, (4) the ability of students to re-examine solutions (Pradani, 2016).

After the research instrument's preparation has been completed, the next step was to take the test questions' validity and reliability. The validity of the research instrument's results obtained t
count of 4.12 and t table of 2.35. Because of the tcount> ttable, the research instrument was valid. While the reliability value obtained was 0.661, which belongs to the high criteria. The test instrument is valid and reliable, thus the test instrument can be used in research.

The test score will be calculated to calculate students' learning outcomes who were given the Two Stay Two Stray type of cooperative learning and conventional learning about surface area concepts. Furthermore, the value will be adjusted to the minimum completeness criteria (KKM) in the mathematics field at SMP Negeri 18 Pontianak to determine students completeness. If the score is ≥ 7.0, then the student is declared complete, but if the student's score is <7.0, the student is incomplete.

The data obtained were tested for normality. If the data was not normally distributed, then the hypothesis testing used nonparametric statistics. The test used was the U Mann Witney-test. Then the zcount value was obtained with the condition. If zcount> ztable, then Ha is accepted. But when zcount <ztable, then Ha is rejected.

Based on the normality test, it is known that the data are not normally distributed. Then the nonparametric statistical test is carried out, namely the Mann Whitney U-Test with the following hypothesis:

H0: There is no effect of Two Stay Two Stray (TSTS) cooperative learning on student learning outcomes.
Ha: There is an effect of Two Stay Two Stray (TSTS) cooperative learning on student learning outcomes

After the calculation was done, the zcount value was 1.87, while the ztable value was 1.64 for α = 0.05. Because of the value of zcount> ztable, it can be concluded that there is an influence on student learning outcomes using Two Stay Two Stray cooperative learning.

RESULTS AND DISCUSSIONS

Results

After the implementation of data collection, the results of students' work in completing test questions were obtained in scores. After obtaining the scores and test results scores, then the data processing was carried out on the test results using descriptive statistics.

The experimental class that was given Two Stay Two Stray cooperative learning obtained an average score of 34.09. The conversion of scores into values on a scale of 0-10 obtained an average value of 8.52. According to the completeness of individual learning outcomes, 28 students or 84.85% of the 33 students had completed (> 7). More than 80% completed individually, which means that the experimental class experienced completeness.

The results of data processing, the control class test scores showed an average score of 27.56. The conversion of scores into values on a scale of 0-10 obtained an average control class of 6.89. Regarding the completeness of individual learning outcomes, 13 students or 36.11% of the 36 students had completed (> 7). Because there were less than 80% of students who completed individually, the control class did not experience completeness.

Based on data processing results, the average score of the experimental class test results given by Two Stay Two Stray cooperative learning obtained an average score of 34.09. The conversion of scores into values on a scale of 0-10 obtained an average value of 8.52. According to the completeness of individual learning outcomes, 28 students or 84.85% of the 33 students had completed (> 7). More than 80% completed individually, which means that the experimental class experienced completeness.

The completeness of learning outcomes in experimental class students shows that the Two Stay Two Stray type of cooperative learning is suitable for the material on the surface area of tubes and cones. According to Wardani (2010), many students experience difficulty solving math problems while learning. The difficulties felt by students are not only based on solving problems. But also in applying a sentence or a mathematical model in the solution.
We can see the ability to solve mathematical problems as one of the processes towards understanding and learning outcomes. If a student already has expertise in problem-solving, then the student can also make decisions about the problem at hand in real life. These students have been able to store relevant information, analyze information and are aware of the need to re-examine the results obtained.

The field's findings inform that the activities of visiting and staying in Two Stay Two Stary cooperative learning applied in this study turned out to make the experimental class experience classical completeness. It agrees with Lie (2010), who stated that the Two Stay Two Stary cooperative learning is suitable for elementary and junior high school students because learning activities involve activities that students usually do daily, namely visiting and receiving guests.

There can be some advantages when implementing Two Stay Two Stray types of cooperative learning activities, including: (1) Two Stay Two Stray type cooperative turns out to make students more enthusiastic and motivated to do learning activities. (2) Students look happy when learning because there are activities such as visiting and staying, which are social activities they usually do daily.

CONCLUSIONS
According to the results of data processing and discussion, it can be concluded that: (1) For the experimental class given Two Stay Two Stray cooperative learning, it got an average score of 34.09. The conversion of scores into values on a scale of 0-10 obtained an average value of 8.52. According to the completeness of individual learning outcomes, in the experimental group, there were 28 students or 84.85% of the 33 students who had completed (> 7). More than 80% completed individually, which means that the experimental class experienced completeness. (2) In the control class, there were 13 students or 36.11% of the 36 students who had completed (> 7). Because there were less than 80% of students who completed individually, the control class did not experience completeness. (3) Because of the value of zcount> ztable, it can be concluded that there is an effect of Two Stay Two Stray cooperative learning on student learning outcomes on the surface area material.

REFERENCES


