ABSTRACT

This research is motivated by the creativity of students of SMP Negeri 2 Sipahutar is still low. For this reason, this study aims to determine whether the TPS (Think Pair Share) type of cooperative learning model can increase students' creativity. This research is a classroom action research conducted in two cycles. The research location is SMP Negeri 2 Sipahutar. The subjects in this study were students of class VIII SMP Negeri 2 Spahutar TP 2010/2011, totaling 31 people. The object under study is an effort to increase students' creativity through cooperative learning model type TPS (Think Pair Share). The test consists of: Initial Test (before the action), Creative Thinking Test I (after cycle I) and Creative Thinking Test II (after cycle II). The data obtained before the action was taken, the average score from the initial test was 40.35 and only 9 students with scores above 60 and 26 students with scores below 60. After giving the first cycle of action, the results were 20 students who achieved a higher score greater than 60 and 11 students who achieve a score below 60 with an average score of 65.84 creative thinking. Because the number of students who achieved a creative thinking score greater than 60 had not yet achieved classical completeness, the research was continued to cycle II (the research was not successful). In the second cycle, there were 27 students (87.10%) who achieved a score greater than 60 and 4 students (12.90%) who had not achieved a score greater than 60 with an average score of 80.16 students' creative thinking. The classical increase from the creative thinking test I to the second creative thinking test was 22.58% with an average increase of 14.32. From the average score, it was found that there was an increase in student creativity from cycle I to cycle II. Based on the results of the research with two cycles, it can be concluded that cooperative learning type TPS (Think Pair Share) can increase students' creativity.

Keywords:
Student Creativity

1. PRELIMINARY

Mathematics education is the basic science of all levels of education and as an internal part of the national education system which plays an important role in the development of science and technology. It is said so because mathematics is one of the basic knowledge that can grow students' thinking skills and is very much needed in today's technological developments.
However, at this time the mathematical ability of Indonesian students is very low. This can be seen from the 2009 TIMSS (Trends in International Mathematics and Science Study) records, an institution that measures and compares the mathematical ability of students between countries, the mathematics mastery of grade 8 students (junior high school level) in Indonesia is ranked 36th out of 48 countries. The average score obtained by Indonesian students is 397. This score is still far below the international average score of 500. From the description above, it can be seen that the mathematics learning outcomes of students in Indonesia are very low. One of the factors that influence the student learning process is creativity.

One of the causes of the low mathematical creativity of students is the application of inappropriate learning methods. This problem arises because the learning applied by the teacher so far does not involve communicative interaction between students in mathematics class. Students are passive, thus making mathematics less meaningful for students.

The development of students' creativity can be developed through divergent questions. Divergent questions can improve student responses to various answers. Divergent or open questions will provide a broad and deep response and involve students to be creative and critical.

Many learning methods have been developed to overcome all problems in education that occur in the field. To increase creativity requires a different learning attitude, more open and challenged to participate actively by providing as many ideas as possible.

One of the learning models in mathematics learning that can provide flexibility in thinking actively and freely in expressing creative ideas is the TPS cooperative learning model.

The use of the TPS learning model in learning will encourage students to construct knowledge in their minds, giving birth to various problems and their solutions. Student creativity is stimulated so that students are actively involved, not just accepting mathematical concepts, especially on the subject of Pythagoras. Think Pair Share cooperative learning model aims to improve and develop students’ ability to solve problems, work and communicate actively through group discussions, and presentations. Think Pair Share is one type of cooperative learning model that is used as an alternative teacher to teach students. This model has the privilege that students in addition to being able to develop their own abilities can also develop group skills. Think Pair Share (TPS) is used in learning mathematics with the aim of helping students overcome problems in learning mathematics so that problem solving skills can develop. This think-pair-share (TPS) learning model not only excels in helping students understand difficult mathematical concepts, but also helps students grow cooperative skills, think critically and develop students' social attitudes. Because in this type of think pair share (TPS) learning, students are not only responsible for themselves but also for their group. So that students actively help and encourage the spirit of learning to be equally successful, and also actively play a role as peer tutors to further increase the success of the group.
2. DISCUSSION

A. Definition of Creativity

Conceptually, the definition of creativity is a definition that starts from the concept of creativity which is translated into criteria for what is called creative. According to Mihaly Csikszentmihaly (1996) that "A creative person is a person who thinks or acts to change a domain or establish a new domain (a create person is someone whose thoughts or actions change a domain, or establish a new domain). Based on that opinion, the ability to generate and develop ideas, new ideas as a development of ideas that have been born before, solving problems divergently (from various points of view) such as in mathematics and science lessons and many other things, requires creativity and creativity. active student participation.

Here are some reasons why creativity needs to be developed and nurtured from an early age in students, namely:

1. Because by being creative, people realize (actualize themselves, and self-actualization is a basic need at the highest level in human life (Maslow, 1967). Creativity is a manifestation of a fully functioning individual.
2. Creativity or creative thinking as the ability to see various possible solutions to a problem, is a form of thinking that until now has received less attention in education (Guilford, 1967). At school, the main training is the acquisition of knowledge, memory, and reasoning (logical thinking).
3. Busy yourself creatively is not only beneficial (for yourself and the environment) but also gives satisfaction to the individual.
4. Creativity that allows humans to improve their quality of life.

B. Cooperative Learning Model

Cooperative learning arises from the concept that students will more easily find and understand difficult concepts if they discuss each other with their friends. Cooperative learning is a learning strategy with a number of students as members of small groups with different levels of ability. In completing their group assignments, each student group member must work together and help each other to understand the subject matter. In cooperative learning, it is said that it is not finished if one of the friends in the group has not mastered the learning material. According to Ibrahim, et al (2000:99) there are several basic elements in cooperative learning, namely:

1. Students in their groups must assume that they are "a life of sharing together".
2. Students are responsible for everything in their group, like their own.
3. Students must see that all members in the group have the same goal.
4. Students must share the same tasks and responsibilities among group members
5. Students will be subject to evaluation or awarded prizes / awards will be applied to all group members.
6. Students share leadership and they need skills to learn together throughout the learning process.
7. Students will be asked to individually account for the material handled in cooperative groups.
C. Think Pair Share Learning Model

Think-Pair-Share type cooperative learning model can give students more time to think, to respond and to help each other. Lie (2002:57) says that: "This think pair share (TPS) model provides at least eight times as many opportunities for each student to be recognized and show their participation to others, in solving a problem". Techniques can be used in all subjects and for all age levels of students. The steps taken in the Think-Pair-Share type are stage 1 Thinking: The teacher gives questions related to the lesson, then students are asked to think about the question independently. Stage 2 Pairing: students are asked to pair (Pair) with their next-door friend (group of 2 people) and express the results of their respective thoughts on the topic earlier. Stage 3 Sharing:

3. RESEARCH METHODS

This research was conducted at SMP Negeri 2 Sipahutar in the 2010/2011 academic year. The subjects in this study were students of class VIII of SMP Negeri 2 Sipahutar in the academic year 2010/2011 who were taken randomly from 3 classes, namely class VIII.1 which amounted to 31 people. The object of this research is an effort to increase students' creativity through cooperative learning model type TPS (Think-Pair-Share) on the subject of the Pythagorean Theorem in class VIII of SMP Negeri 2 Sipahutar in the academic year 2010/2011. This type of research is classroom action research. This research approach is a qualitative approach which aims to reveal the obstacles and difficulties experienced by students in solving mathematical problems, especially in the Pythagorean material to increase students' mathematical creativity.

Through classroom action research (CAR), the Class Action Research Procedure Scheme was adopted from the source: the PGSM Project Training Team as follows:

![Class Action Research Procedure Scheme Diagram]
Details of the implementation of actions in research in each cycle are described below:

**Cycle I**

1. Planning:
   
a). Identification of the problem in the research is the low level of students' mathematical creativity. Before taking action, the researcher gave an initial test to students to determine the level of creativity of students about the Pythagorean theorem material.

b). Determination of alternative problem solving. to overcome the above problems, planned learning with the Think Pair Share learning model. At this stage, learning resources, learning scenarios (RPP), Student Worksheets are also prepared, developing an evaluation format for students' creative thinking skills and learning observation formats or teacher activity observation sheets.

2. Action

   After planning alternative solutions to problems, action is taken. Activities at this stage:

   a. The teacher explains the prerequisite material
   b. Carry out learning activities using the Think Pair Share learning model.

3. Observation

   Observations are carried out simultaneously during the implementation of the learning action. This observation activity was carried out to observe the behavior of researchers who acted as teachers during the learning process, namely to find out whether the researchers had carried out learning according to the scenarios that had been designed and to see the suitability of the stages of the Think Pair Share learning model.

   After the observation has been completed, it is followed by a discussion between the teacher and the researcher to obtain feedback. This feedback is needed to improve the process of implementing the action. Researchers who act as teachers will be assessed according to the teacher's activity observation sheet.

4. Reflection

At this stage an evaluation of the learning process is carried out with the Think Pair Share learning model. Improve the implementation of actions according to the results of the evaluation to be used in the next cycle.

**Cycle II**

Cycle II is carried out if the basis for research success has not been achieved. In this cycle, we will discuss the concept of comparing the sides of a right triangle if one of the angles is 30o, 45o, 60o. In this cycle, it is focused on improving the implementation of actions or improving the application of learning models and overcoming the difficulties faced by students as a result of reflection in cycle I.
1. Planning.

Planning based on:

a). Problem identification for cycle II is improving students' creative thinking skills and improving the implementation of action I.

b). Determination of alternative Troubleshooting

To overcome the above problems, learning is planned using the Think Pair Share learning model and planning actions to answer the problems found in the implementation of the I action

2. Action

After planning alternative solutions to the problem, the implementation of the action is carried out. Activities at this stage: carry out learning activities using the Think Pair Share learning model. Learning activities refer to the lesson plans and worksheets that have been prepared previously

3. Observation

Observations are carried out simultaneously during the implementation of the learning action. This observation activity is carried out to observe the behavioral activities of researchers who act as teachers during the teaching and learning process, namely to find out whether the researchers carry out learning according to the scenarios that have been designed and to see the suitability of the stages of the Think Pair share learning model and to find out whether the problems found in the first action has been overcome.

After the observation was completed, it was followed by a discussion between the teacher and the researcher to obtain feedback. This feedback is needed to improve the distortion process action plot. Researchers who act as teachers will be assessed with teacher activity observation sheets.

4. Reflection

At this stage an evaluation of the learning process is carried out with the Think Pair Share learning model

Data analysis of students' creativity abilities was taken from the results of students' creativity ability tests. The data analyzed is post test data to calculate the value of the level of student mastery is formulated as follows:

\[
\text{Tingkat Penguasaan} = \frac{\text{Jumlah Skor Perolehan}}{\text{Jumlah Skor maksima}} \times 100
\]

This data analysis was carried out using descriptive for classification of relative values. According to Human Resource Consultant Lavanda (in Fredes Aprilla's thesis, 2006:50) to determine students' creative thinking skills, the following criteria are used:
### Mastery Level and Category

<table>
<thead>
<tr>
<th>Mastery Level</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 – 100</td>
<td>High student creative thinking</td>
</tr>
<tr>
<td>61 – 79</td>
<td>Medium student creative thinking</td>
</tr>
<tr>
<td>0 – 60</td>
<td>Creative Thinking of students is low</td>
</tr>
</tbody>
</table>

Analysis of observational data was taken from observation data during the learning process. This data was obtained from the observer. The observation assessment criteria are as follows:

According to Suryosubroto, the calculation of the final value of each observation is determined based on:

\[
Na = \frac{S_y}{B_i}
\]

*Na* = final value  
*S* = score obtained  
*B* = many items

Guidelines for viewing teacher and student activities and student creativity can be seen from the following guidelines:

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 – 1.5</td>
<td>Very less</td>
</tr>
<tr>
<td>1.6 – 2.5</td>
<td>Not enough</td>
</tr>
<tr>
<td>2.6 – 3.5</td>
<td>Well</td>
</tr>
<tr>
<td>3.6 – 4.5</td>
<td>Very good</td>
</tr>
</tbody>
</table>

### 4. RESEARCH RESULTS AND DISCUSSION

#### a. Circumstances in cycle I

Ability results creative thinking in cycle I can be seen from the table as follows:

<table>
<thead>
<tr>
<th>Creative thinking score</th>
<th>Ability level</th>
<th>Many students</th>
<th>Percentage of students</th>
<th>Average score</th>
<th>ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-100</td>
<td>Tall</td>
<td>8</td>
<td>25.81</td>
<td>65.84</td>
<td></td>
</tr>
<tr>
<td>61-79</td>
<td>Currently</td>
<td>12</td>
<td>38.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-60</td>
<td>Low</td>
<td>11</td>
<td>35.48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The average value of the creative thinking ability test in the first cycle was 65.84. When viewed from the average initial ability test which is 40.35, there is an increase, but it is not too significant because there are still 11 students out of 31 students who take the test in the "low" assessment category or the percentage is around 35.48%.

#### b. Circumstances in cycle II

The results of problem solving abilities in cycle II can be seen from the table as follows:
### Creative Thinking Ability Test Results

<table>
<thead>
<tr>
<th>Creative thinking score</th>
<th>Ability level</th>
<th>Many students</th>
<th>Percentage of students</th>
<th>Average ability score</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-100</td>
<td>Tall</td>
<td>17</td>
<td>54.84</td>
<td>80.16</td>
</tr>
<tr>
<td>61-79</td>
<td>Currently</td>
<td>10</td>
<td>32.26</td>
<td></td>
</tr>
<tr>
<td>0-60</td>
<td>Low</td>
<td>4</td>
<td>12.90</td>
<td></td>
</tr>
</tbody>
</table>

The average value of the creative thinking ability test in the second cycle is 80.16 or 87.10% of the number of students who have at least moderate creative thinking skills. When viewed from the average creative thinking ability test in the second cycle, there is an increase when compared to the average value in the first cycle, namely: 65.84 or 64.51% of the number of students who have at least moderate creative thinking skills. Meanwhile, the planned level of creative thinking ability is 85% of the number of students who take the test. Judging from the students' mathematical creative thinking ability, this research stopped at cycle II.

For more details, the following comparison chart of students' creative thinking abilities can be seen:

![Comparison Chart](chart.png)

5. **CONCLUSIONS AND SUGGESTIONS**

Based on the research results obtained, it can be concluded as follows:

The TPS (Think Pair Share) type of cooperative learning model can increase students' creativity. This can be seen from the first cycle, after giving the action the average score of students' creative thinking was 65.84. And the number of students who have achieved a score greater than 60 as many as 20 people (64.52%). Then after giving the action in the second cycle with the average score of students' creative thinking is 80.16. And the number of students who have achieved a score greater than 60 is 27 people (87.10%). From the mathematics creative thinking test I to the second mathematics creative test, it shows that...
students' creative thinking skills have increased based on the average score from moderate to good creative thinking of 14.32.

REFERENCES


Al-Khalili, A. 2005. Developing Children's Creativity. Al-Kautsar Library. Jakarta


Maslow. 1967. Developing Children's Creativity (Translation). Rineka Cipta. Jakarta


