

INCREASING STUDENTS'S CREATIVE THINKING SKILLS WITH COOPERATIVE LEARNING MODEL TYPE SCRAMBLE ON TRIGONOMETRY

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ABSTRACT

In learning mathematics, less active participant students like tends to silence and rarely ask. Students' ability to express ideas or constructs is not visible, so their creative thinking skills have not been fully explored. The purpose of this research is to know the improvement of students' creative thinking skill with cooperative learning type scramble model in mathematic learnings on material Trigonometry HOTS oriented for the students of class X Light Vehicles Engineering (LVE)-D Muhammadiyah Vocational High School (SMK Muhammadiyah) 1 Bambanglipuro Bantul District even semester of 2017/2018. This research is a classroom action research. The subjects of this research were students of class X LVE-D, which amounted to 26 students. This research's object is the whole process of cooperative learning model type scramble to improve students' creative thinking. Research conducted two cycles of cycle I and cycle II, each c; consists of 2 meetings. Data were collected using observation methods, interviews, and field notes. The data collection instrument uses observation sheets, interview guides, and test questions. Data analysis techniques in the form of data analysis of observations, data interview, and field notes analysis, test analysis, and triangulation. The result of this research shows that learning by using cooperative type model of scramble can improve students' creative thinking skills in learning mathematics in class X LVE-D SMK Muhammadiyah 1 Bambanglipuro academic year 2017/2018. This is proven from the observation result of students' creative thinking skill in learning every cycle has increased, that is average of observation result percentage of student's creative thinking skill at cycle I 51,41% is in enough criteria, while in cycle II increase bec. In comparison, 09% reached the right criteria. Interviews showed a positive response to the students' creative thinking skills.

Keywords: CAR, Student Creative Thinking Skills, Cooperative Learning Model Type Scrambler.

INTRODUCTION

Creativity includes student capital to succeed in learning mathematics. One reason why creative learning is important, according to Treffinger in Semiawan et al. (1984: 37), is Creative Learning is the most important aspect of our efforts to help students so that they are better able to handle and direct learning for themselves. Mathematics is a basic science that trains students to think critically, logically, analytically, and systematically, which is a higher-order thinking ability. In this case, students' creative thinking skills in mathematics learning can also be developed in HOTS (Higher Order Thinking Skill) oriented questions. According to Ariandari, Weindy Pramita (2015: 491-492), namely: The ability to think at a higher level is the ability to connect, manipulate, and transform knowledge and experience already possessed to think critically and creatively to determine decisions and solve problems in new situations. Moreover, they cannot be separated from everyday life. The ability to think critically and think creatively is an indicator of higher-order thinking skills.

Based on an interview with a mathematics teacher at SMK Muhammadiyah 1 Bambanglipuro, explaining that the learning model in class X LVE-D is indeed conventional and also believes that student's creative thinking skills have not been explored and developed to the fullest. According to Munandar, Utami (1992: 88-93), the view of creative characteristics is manifested in the individual's behavior. Specifically, creative thinking ability characteristics are divided into creative thinking abilities based on their Aptitude and Nonaptitude. The characteristics of creative thinking ability based on Aptitude are smooth thinking ability, flexible thinking ability, original thinking skills, detailed or elaborate skills, assessment skills. While the characteristics of the ability to think creatively based on its

nonaptitude are: curiosity, are imaginative, feel challenged by diversity, the nature of risk-taking, the nature of respect. A new learning model is applied to improve students' creative thinking skills, the scramble type cooperative learning model. According to Shoimin, Aris (2014: 166), the scramble type cooperative learning model steps are as follows:

Table 1. Steps of the scramble type cooperative learning model

Stage	Steps
1 Preparation	<ul style="list-style-type: none"> • The teacher prepares materials and media (question cards and answer cards) to be used. • The teacher arranges seats according to the student group.
2 Core activities	<ul style="list-style-type: none"> • The teacher gives a question card and answer card to each group to be matched before the answers have been randomized in such away. • The teacher conducts extensive group discussions to analyze and hear each small group's responsibility for the work agreed in each group. • The teacher compares and studies the right and logical answers.
3 Follow-up	<ul style="list-style-type: none"> • The teacher gives similar assignments with different materials aiming at students' enrichment activities.

In this study, the following problems were formulated: 1) Is the Scramble type cooperative learning model able to improve students' creative thinking skills on HOTS-oriented Trigonometry material for class X LVE-D students SMK Muhammadiyah 1 Bambanglipuro Bantul Regency even semester of the academic year 2017/2018? 2) How can the Scramble type cooperative learning model improve creative thinking skills in the Trigonometry material of Grade X LVE-D students of SMK Muhammadiyah 1 Bambanglipuro Bantul Regency semester of the academic year 2017/2018?

From the main problems that have been formulated above, the purpose of this study is 1) To find out the improvement of students' creative thinking skills with scramble type cooperative learning models in mathematics learning on HOTS-oriented trigonometry material for class X students of LVE-D SMK Muhammadiyah 1 Bambanglipuro Bantul Regency even semester 2017/2018 school year. 2) To find out how the process of implementing Scramble type cooperative learning models can improve creative thinking skills on the trigonometric material of class X LVE-D students of SMK Muhammadiyah 1 Bambanglipuro Bantul Regency even semester of the academic year 2017/2018.

METHODS

The subjects of this study were students of class X LVE-D SMK Muhammadiyah 1 Bambanglipuro Bantul Regency in the even semester of the Academic Year 2017/2018. Moreover, the object in this study is the whole process of the Scramble type cooperative learning model to improve students' creative thinking. According to Arikunto, Suhardjo, and Supardi (2009: 16), several experts put forward a model of action research with a different chart. However, in general, four stages are commonly passed, namely (1) planning, (2) implementation, (3) observation, (4) reflection. The model and explanation for each stage are as follows.

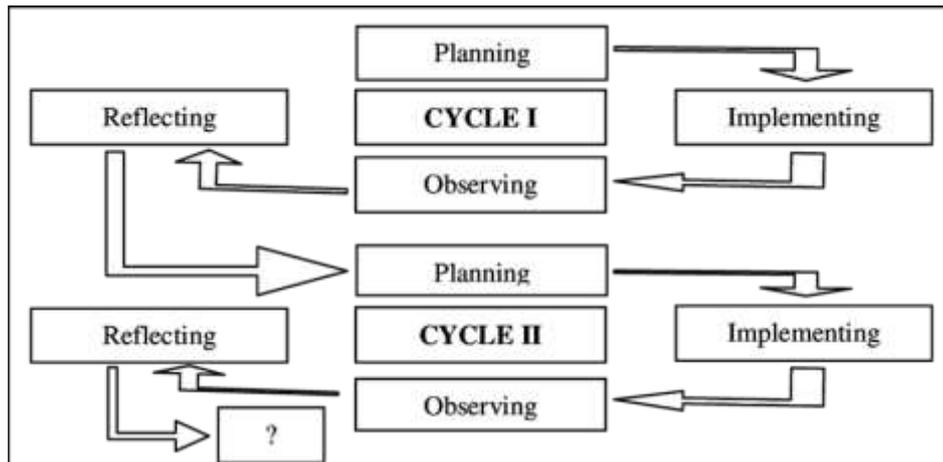


Figure I. Class Action Research Flow

In this study, the data collection method techniques are as follows: observation method, interview method, field note method, and triangulation. The data collection instruments used observation sheets of students' creative thinking skills, teacher observation sheets, interview guidelines, and test questions. Data analysis of creative thinking skills using the percentage formula viz

$$NP = \frac{R}{SM} \times 100$$

Information:

- NP = Percent value to be searched for
- R = Raw scores obtained by students
- SM = The ideal maximum score from the test concerned
- 100 = Fixed number

(Purwanto, Ngali 2004:102)

Percentage Criteria (NP) can be seen in the table below

Table 2. Percentage criteria (NP)

Mastery Level	Predicate
81% ≤ NP ≤ 100%	Very well
61% ≤ NP ≤ 80%	Well
41% ≤ NP ≤ 60%	Enough
21% ≤ NP ≤ 40%	Less
NP < 21%	Very lacking

(Arikunto, Suarsimi dan Cipi safruddin Abdul Jabar 2009: 35).

For the results of teacher observation sheet data, interview data, and field notes were analyzed descriptively qualitatively. Simultaneously, the analysis of test results can be interpreted as the completeness of student learning. Mastery learning of individual and classical students is based on the Minimum Completeness Criteria (MCC). Triangulation is done by comparing the results of observations of students' creative thinking, teacher observations in the implementation of mathematics learning, the results of student and teacher interviews, and field notes—triangulation for evaluation of actions that will be the basis for further cyclical actions.

RESULTS AND DISCUSSION

This research was conducted on 12 April 2018 to 30 April 2018. The researcher acted as a mathematics teacher in class X LVE-D and carried out mathematics learning using scramble type

cooperative learning models. In the first cycle, the planning stage of the researcher compiled an RPP with a mathematics teacher, compiled an observation sheet of students' creative thinking skills, and an observation sheet of implementation of learning with a scramble type cooperative learning model and compiled interview guidelines. After the implementation phase, at this stage, the researcher carries out direct mathematics learning by using a scramble type cooperative learning model. During the learning process, the researcher assisted a mathematics teacher in class X LVE-D and a colleague as an observer. The first meeting discusses the relation between trigonometric angles in quadrant I and quadrant II. The second meeting discusses the relation between trigonometric angles in quadrant III and quadrant IV with each time allocation of 2 x 40 minutes. Then the observation phase, observation, or observation are carried out during the learning process by the observer and researcher. In cycle, I obtained the percentage of observations of students' creative thinking skills. Students and teachers filled these observations for the first meeting and the second meeting. The results of the observation percentage of creative thinking skills of students and observers in the first cycle are shown in the table below.

Table 3. Average Percentage of Students' Creative Thinking Skills by Students in Mathematics Learning in Cycle I

Indicator	Average Student	Group Average	Mean	Criteria
Smooth thinking skills	53,49%	47,34%	50,41%	Enough
Flexible thinking skills	50,38%	29,50%	39,94%	Less
Original thinking skills	53,48%	44,00%	48,74%	Enough
Detailed or elaborating skills	51,86%	41,00%	46,43%	Enough
Judging or evaluating skills	55,28%	57,67%	56,47%	Enough
Curiosity	54,26%	43,33%	48,79%	Enough
Imaginative	54,76%	33,00%	43,88%	Enough
Feel challenged by pluralism	58,35%	52,67%	55,51%	Enough
The nature of risk-taking	60,41%	60,00%	60,21%	Well
Respect	67,36%	60,00%	63,68%	Well
Mean	51,41%			Enough

Based on the table above shows the percentage of creative thinking skills in class X LVE-D SMK Muhammadiyah 1 Bambanglipuro by 51.41%. In this case, students' creative thinking skills are in the Fair criteria. Then the researchers continued learning in cycle II. The last stage is the reflection stage, at this stage Based on the implementation, observation, and interviews in the first cycle, on specific indicators of creative thinking skills of students in learning mathematics, is not optimal, so a reflection is held between researchers and mathematics teachers in class X LVE-D SMK Muhammadiyah 1 Bambanglipuro on the observation of the results as material to determine actions in cycle II.

In cycle II, from the results of reflection on cycle I, researchers then formulated actions to correct deficiencies in cycle I and optimize each indicator to achieve the high criteria in this cycle II. The planning stage of the action to be taken is still the same as the class action that has been done in the first cycle, namely compiling lesson plans with mathematics teachers, compiling observation sheets of students' creative thinking skills, and observing sheets of learning implementation with scramble type cooperative learning models, and compiling interview guidelines. Next to the implementation phase, the teacher implements direct mathematics learning using scramble type cooperative learning models. The first meeting discussed the sine rules with a time allocation of 2 x 40 minutes. The second meeting discussed cosine rules with an allocation of time of 2 x 40 minutes. Then the observation stage, From the observations made during the learning process in the second cycle, it can be seen that overall, students can adjust the scramble type cooperative learning model well. Also, some students' creative thinking skills have been seen. This is shown by the behavior of students who always trigger questions when experiencing difficulties, can find ideas or ideas when completing a scramble worksheet with classmates by reading books or other sources of information. When discussing groups, students express

their own opinions and ideas to get the right settlement method—obtained observations from students and observers in the second cycle, as in the table below.

Table 4. Average Percentage of Students' Creative Thinking Skills by Students in Mathematics Learning in Cycle II

Indicator	Average Student	Group Average	Mean	Criteria
Smooth thinking skills	56,82%	65,34%	61,08%	Enough
Flexible thinking skills	57,95%	64,00%	60,97%	Less
Original thinking skills	62,68%	67,33%	65,01%	Enough
Detailed or elaborating skills	58,11%	68,00%	63,05%	Enough
Judging or evaluating skills	61,59%	66,67%	64,13%	Enough
Curiosity	61,03%	63,33%	62,18%	Enough
Imaginative	61,04%	62,00%	61,52%	Enough
Feel challenged by pluralism	63,67%	73,33%	68,50%	Enough
The nature of risk-taking	67,77%	76,00%	71,88%	Well
Respect	71,34%	74,00%	72,67%	Well
Mean	65,09%			Enough

Based on the table above, it can be seen that the percentage of creative thinking skills in class X LVE-D SMK Muhammadiyah 1 Bambanglipuro is 65.09%. Thus, it can be concluded that the percentage of students' creative thinking skills shows Good criteria. Then the researcher stops at this second cycle. However, there is still a reflection between the mathematics teachers of class X LVE-D with the researcher on the results of observations that have been made.

The results of classroom action research consisting of the cycle I and cycle II regarding mathematics learning using scramble type cooperative learning models show an increase in creative thinking skills in class X LVE-D SMK Muhammadiyah 1 Bambanglipuro. This is based on observation sheets and interviews that show an increase. This increase is seen in the existing indicators of students' creative thinking skills. In the first cycle phase, the process of learning mathematics using scramble type cooperative learning models has not run optimally because students are still in the adjustment phase. In the first cycle of this first meeting, students' creative thinking skills were still not categorized either because of the students' behavior in the class when group discussions did not show students' creative thinking skills. In the first cycle, the second meeting saw an increase in students' creative thinking skills using a scramble cooperative learning model. Based on the observations obtained, the percentage of students' creative thinking skills of 51.41% is sufficient. After fixing the first cycle's deficiencies, the second cycle shows an increase in students' creative thinking skills with a scramble type cooperative learning model. In the second cycle, the first meeting and the second meeting, there is an increase in students' creative thinking skills gradually and has reached success. For more details can be presented in the following graphical form.

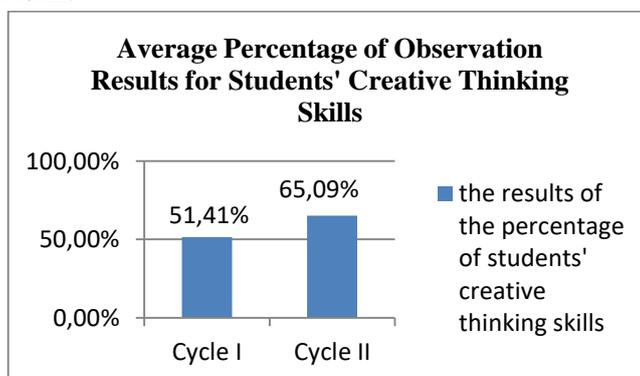


Figure II. Average Percentage Graph Results of Observation Creative Thinking Skills of Students Cycle I and Cycle II.

Then the results of researchers' interviews with students also showed very good student responses to mathematics learning by using a scramble type cooperative learning model. Also, there was an increase in student test results with HOTS-oriented questions in cycle I and cycle II. Overall it can be concluded that there is an increase in students' creative thinking skills by using a scramble type cooperative learning model. Then this action research process to improve students' creative thinking skills with scramble type cooperative learning models also shows the process of improvement. Thus both hypotheses of action are accepted.

CONCLUSION

Based on the study results, it can be concluded that mathematics learning through scramble type cooperative learning models can improve the creative thinking skills of class X LVE-D students of SMK Muhammadiyah 1 Bambanglipuro in the academic year 2017/2018. It can be seen from the results of observations of students' creative thinking skills in the learning process in the first cycle the average percentage of students' creative thinking skills of 51.41% is insufficient criteria. While in the second cycle, the students' relative thinking skills increased to the right criteria, which amounted to 65.09%. The action research process to improve students' creative thinking skills with the scramble type cooperative learning model indicates an improvement process. This can be shown by students' attitude who have dared to ask questions when answering questions given during group discussions. Students are also able to find ideas to solve problems. Students also look to try to complete the exercises given the problem even though the problem is difficult. Mathematics learning with scramble type cooperative learning model also received positive responses from students. This is based on the results of interviews with students and teachers that show a positive response and follow the learning of mathematics well.

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