

**Application of Outdoor Learning Integrated CPS Models to Improve  
Mathematics Learning Outcomes Students of SMA Negeri 4 Pekanbaru**

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**Abstract.** Research is motivated by low mathematics learning outcomes. This study aims to improve the learning process and improve the mathematics learning outcomes of students public high school 4 Pekanbaru academic year 2017/2018 through the application of the outdoor learning integrated CPS Model. This research is a classroom action research that the teacher plays a direct role in the learning process. Subjects in this study were students of class XII IPS 1, SMA Negeri 4 Pekanbaru consists of 36 students and the object of this research is to increase the learning outcomes of mathematics with the integrated *outdoor learning* CPS Model. Based on the average results of students' mathematics learning tests on the cycle I was 77.09 and cycle II was 82.5 which experienced a significant increase, so based on the results of the obtained data analysis it can be concluded that the application of integrated outdoor learning CPS can improve students' mathematics learning outcomes in class XII IPS 1 SMA Negeri 4 Pekanbaru.

**Keyword :** *Creative Problem Solving, Outdoor Learning, Learning Outcome, Classroom Action Research*

## **1. INTRODUCTION**

Mathematics is universal science which has an important role in human life. In every development of times, mathematics is increasingly needed. With mathematics, human develop into modern human beings. Mathematics subject is given to find out and use the principles of mathematics in everyday life, about calculation, problem solving at school environment or in the community.

Mathematical lesson is one the lesson that provides students about basic numeracy skills used in everyday life. Besides that, Math skill is also needed for everyday life as well as in facing advance of science and technology. This is the one that underlies the mathematics lesson needs to be given to each students since elementary school, even since kindergarten.

Demanded mathematical skill is formed through continuous learning, started with increasing of knowledge about mathematical methods, followed by skill in presenting a problem mathematically and finishes it, and lead to establishment of attitudes of honesty, criticality, creativity, accuracy and obeying the rules.

Sumarmo (2013: 100) states that the nature of mathematics education has two-way development, namely development for current and future needs. Development of current needs here is learning mathematics leads to understand concepts needed to solve math problems and other knowledge. According to Lerner in Abdurrahman (2003: 253) suggests that the mathematics curriculum should be includes 3 elements includes (1) concept; (2) skill; and (3)

problem solving.

Understanding of mathematics learning goals as stated above, the teacher should put attention to the management of learning in order to understand students' optimal mathematical concepts. Understanding of mathematical concepts which is gotten when learning mathematics can significantly grow understanding mathematical of concepts and mathematical ideas, such as: interpreting (to interpret), exemplifying (to give example), classifying (to classify), summarizing (to summarize), inferring (to guess), comparing (to compare) and explaining (to explain).

Pay attention to the importance of roles mathematics as a means of development students' thinking in dealing with present and future needs. As stated above, the teacher should be the main spearhead to manage learning activity in give serious attention in creating an atmosphere of learning can provide opportunities for students to build his knowledge by their own creation with teacher's help or guidance. Based on researcher observation, Mathematics subjects is still considered as an unwelcome lesson by most students. Some of them are still afraid, do not want to ask, unwilling to make assignments, lack of student participation as well lack of enthusiasm to learn mathematics. In group learning only certain students only those who are actively involved in the learning process while other students are less participating.

Researchers interviewed three students in the class XII IPS 1 SMA Negeri 4 Pekanbaru, it is obtained information that in group learning, students are more likely to copy his friend's work who considered as potential students because they feel uncertain with his understanding. In presenting group assignments, it is the responsibility of the student considered to have good potential in that group, so that they get good value for the group. Students who are able to solve that problem rarely want to give an explanation to another friend, because he felt his friends were not eager to understand the completion of the problem given by the teacher.

At the time of observation during the learning process, it was seen at preliminary activities students do not show enthusiasm in learning the mathematics that was seen when greeting time, there were even students who don't collect homework assignments for various reasons. The low of student's learning interest towards mathematics subject also affects the results student's learning outcome, because learning outcome are interaction between learning and teaching actions which is realized in the form of numbers or which is often referred to as value. When student learning interest is high, then student learning outcomes is also good. And vice versa, when student learning interest is low, then students learning outcomes is also low. This can be seen from the results of the average National Examination score of Social Mathematics year 2016/2017, that is 52.84.

Teacher is a professional job. To be able to carry out the task well, besides fulfilling physical and spiritual conditions, teacher must have the knowledge and skills of teacher training too. He is expected to be able to prepare learning process, implementing and assess student learning outcomes well, able to choose and use interaction strategies for the appropriate learning activities, to process classes and guide students appropriately. Students do not have to learn in class. Learning can also be carried out in the nature, when students are saturated in class, we as teachers can bring them to learn in the form of other activities to foster their interest in learning. One of learning models that can be carried out is outside class learning activities (outdoor learning). Suyadi mentions that the benefits of outdoor learning is learning outside the classroom (outdoor learning) is more interesting and fun for students as well the learning is more meaningful because students are faced with the truth and or natural situations and circumstances (Husamah, 2013). In addition, learning resources are more varied and recreational so students are not bored in learning and they are more eager and concentrate on the learning delivered by the teacher. Outdoor learning is also as a wider learning vehicle for children so that they know the

real world more and image will be embedded in students that the world as a class. In addition, quality of learning in real situations will provide improvement of learning achievement capacity through learning objects and it can also improve skill.

CPS learning model is a learning model that focuses on teaching and problem solving skill which is followed by skills reinforcement (Pepkin, 2004). When faced with a problem situation, students can do problems solving skill to choose and develop the response. Problem-solving skill expands the thinking process. CPS is representation of natural dimensions process, not a forced effort. By using a learning model this is expected to provide more opportunities for students to develop their thoughts both in learning and when solving problems. Therefore, students will get maximum benefit both in process and in learning outcome.

## **2. RESEARCH METHODS**

This research is a classroom action research. According to Suyanto (inside Mansur Muslich, 2010) Classroom Action Research is a form of reflective research by carrying out certain actions in order to fix and / or improve learning practices professionally in class. The action done is to apply integrated *outdoor learning* CPS to improve student mathematics learning outcomes class XII IPS 1 SMA Negeri 4 Pekanbaru. Suharsimi Arikunto (2012) outlines that classroom action research is carried out through four stages which are commonly passed, namely: (1) planning; (2) implementation; (3) observation; and (4) reflection.

The subjects of this study were students of SMA Negeri 4 Pekanbaru 2017/ 2018 academic year. Researchers take samples class XII IPS 1, with total 36 students consists of 18 male students and 18 female students who have high, medium and low ability. The class was chosen because of the students' mathematics learning outcomes are still relatively low. While the object of research is the *outdoor learning* integrated CPS model to improve students' mathematics learning outcomes in class XII IPS 1, SMA Negeri 4 Pekanbaru.

The instrument used is the sheet observation and test of mathematics learning outcomes. Data collection technique about learning processes uses observation and test technique. Data on students' mathematics learning outcomes are collected through tests in the form of daily test that includes row and series topic. Daily test 1 is conducted at the third meeting and daily test 2 is conducted at the sixth meeting. Those daily tests are done by students individually to obtain individual development score.

Data that has been obtained through observation sheet and test of mathematics learning outcomes is then analyzed. Analysis technique used is descriptive narrative qualitative analysis and descriptive statistics analysis techniques. Data about mathematics learning outcomes is obtained from daily test that is analyzed based on achievement of KKM. Analysis of KKM achievement is carried out by comparing the value of learning outcomes obtained by students with KKM determined by the school which is 75. Students are categorized passed the exam if it reaches a value of  $\geq 75$ .

## **3. FINDING AND DISCUSSION**

The results of the study were analyzed namely the activities of teachers and students during the learning process and the results of students' mathematics learning.

First cycle. Based on the results of the analysis of observation sheets and discussions with observers, there are actions that have been carried out well and actions that have not been carried out according to plan. The actions that have been going well will be kept by the researcher, while for the weakness that occur for the action plans will be arranged by the researcher. The weaknesses are following: a) The students did not complete the task on time because they did not interest about the discussion in their group. b) The researchers have not been able to asked all

students to active to discuss with their group members in doing on LAS, so there are still many students who copied their friends without asked how to get these answers. This case hapened because of lack of interest and not serious did the assignment that have given by the researcher. c). In worked the LAS, the researcher found a group that were not satisfied quickly with the results of the group's work, due to limited time, the results of the group's LAS did not optimal.

Based on the reflection of the first cycle, the researcher draws up her improvement plans as follows: Researcher will be more careful in monitoring the work of LAS or questions by each student in their group. If there are some students who are silent and are not active in their discussions, or doing the LAS individually, the researcher will ask the student to present the LAS in front of the class. So that if the student cannot present the LAS correctly, the group value/score will decrease.

Second cycle. Based on the results of the analysis of observation sheets and discussions with observers, the implementation of the learning process in cycle II has improvements, like most students have actively discussed in their groups. Students can complete the assignments on time. The students have been able to present the results of their group discussions in their own words, students are able to respond to the results of other group presentations. And the students were able to convey the conclusions of learning material. The results of reflection in cycle I and planning for improvement have also been applied at each cycle II, which reminds the students to work on LAS in discussion because each student's activity in their group is assessed and asked the students to conclude their learning material. The students also understand the learning step, so there are not too many mistakes.

In the learning process without action, interaction between teachers and students is not optimal. There are only a few people who want to ask some questions and respond to the subject matter provided by the teacher. In cycle I, the interaction between the teacher and the students increased somewhat and before the cycle I. In cycle II, the interaction between the teacher and the students increased again and cycle I, it was seen that there were many responses and students to the material they got from the teacher.

The average of result mathematics learning before the action was 67.48 in the first cycle was 79.09 and in the second cycle was 82.5 from the average results obtained it can be seen that after applied CPS in *outdoor learning*, the average of the result learning of mathematics students have increased. A description of student learning before the action with after the action or from the basic score to first daily test and second daily test, can be presented as in the following figure.

From the description of the learning process and student's score, it can be said that the results of this study support the action hypothesis proposed by the researcher, that is, if the CPS Model is integrated *outdoor learning* can improve the learning outcome process and improve mathematics learning outcomes of XII IPS 1 students in SMA Negeri 4 Pekanbaru 2017/2018 school year in the subject matter and series.

The increase in student learning outcomes is because in the CPS Model integrated *outdoor learning* students are given the opportunity to actively participate in solving problems with their groups, compare the students' creativity in conveying and presenting material in front of other groups, and providing a different situation because learning activity is done outside the classroom. Here are some snippets of learning activities.

### IMPROVING AVERAGE STUDENTS LEARNING OUTCOMES

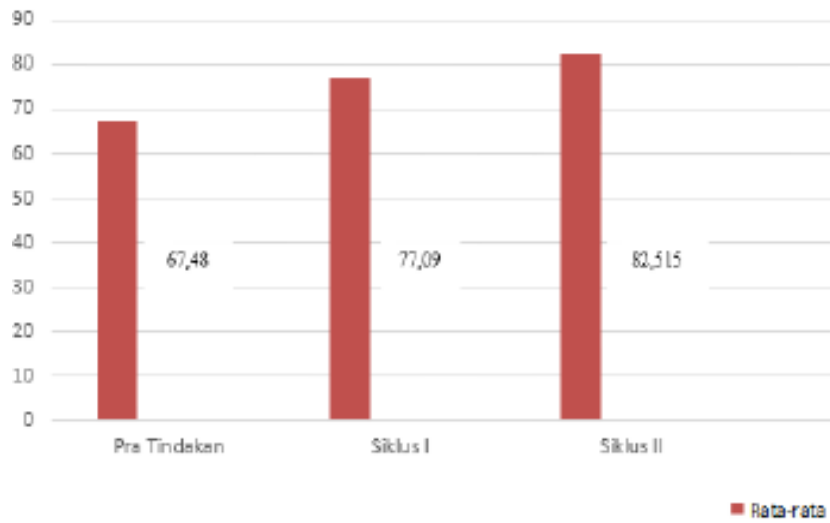


Figure 1. Graph of increasing average student learning outcomes



Figure 2. Snippets of learning activity

#### 4. CONCLUSION

Based on the results of research and data analysis, it was concluded that there was an increase in mathematics learning outcomes of students of class XII IPS 1 of SMA Negeri 4 Pekanbaru through action by using CPS in learning mathematics *outdoor learning*. It can be seen

from the average student mathematics learning outcomes that is 67.48 before applying CPS in mathematics learning and 82.5 after applying CPS in mathematics learning.

Based on the results of the research above, the researcher gave several suggestions related to the application of CPS in the learning process of *outdoor learning* mathematics:

1. In the process of learning through CPS in mathematics learning, the role of the teacher in guiding students to do every step in learning is very necessary, so that the learning process becomes smooth and easier to receive lessons.
2. The teacher should familiarize students to always interact and cooperate with their classmates in understanding the lesson, thus students will be accustomed to understanding the different abilities in their class.
3. Preferably, the teacher should be able to manage the best possible time in carrying out CPS steps in learning mathematics.

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