



Developing Creative Thinking and Physics Students' Achievement by using CPS

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Abstract

The purpose of this study is to explain the implementation of physical learning using the Creative Problem Solving (CPS) method to enhance creative thinking skills and learning outcomes in the X-IA2 SMA Negeri 1 Sidenreng Rappang class. The research approach used was Classroom Action Research across two learning stages, each of which consisted of planning, execution, observation and reflective phases. The results showed that studying physics with the CPS approach could boost students' creative thinking. This is demonstrated by: (1) an improvement in the number of students who completed 12 during Cycle I to 26 in Cycle II with an average learning outcome of 77. N-gain in Cycle I of 0.20 is included in the low category and N-gain in the second cycle, 0.30 has been included in the medium category, (2) the average student learning group participation in the learning phase has been included in the Activity category, which has increased to the High Activity category, and (3) the use of innovative students.

Keywords: *creative thinking; physics learning outcomes; the PS approach; the CPS model*

Introduction

Education is a way to improve the quality of human resources (HR) which is important in national development. Therefore, education must get top priority from the government and society. Ironically, education in Indonesia in general still uses a conventional learning process which causes low thinking ability of students (Nikmah, Wildan & Munatri, 2015). Whereas according to Abidin (2013), in the 21st century there are at least four competencies that must be mastered, namely creative thinking skills, high understanding skills, communication and critical thinking skills and collaboration skills. The ability to think creatively is one of the competencies that is indispensable to face the global competition era. The ability to think creatively is a thought process that produces ideas, new ideas in a broad and varied manner. This thinking process

involves elements of fluency, flexibility, originality, and elaboration.

The ability to think creatively is very much influenced by self-confidence in the students themselves. According to the research results of Kisti and Aini (2012), there is a significant relationship between creativity and self-efficacy. Self-confidence in question is self efficacy. Self-efficacy is a belief from someone to display new actions that are used to overcome a problem in order to achieve goals. According to Bandura, self efficacy is divided into three dimensions, namely the dimensions of level, strength, and generality (Masraroh, 2012). Based on the author's experience as a physics subject teacher and the results of conversations with physics teachers, it was concluded that students' creative thinking skills, especially in Physics subjects, were still low. This problem appears when the

teacher asks problem-solving questions, students tend to be silent and less active in solving problems. The lack of students expressing opinions is due to the lack of a variety of opinions due to the lack of ideas that emerge. The ideas that emerge are closely related to the ability to think creatively. As stated by Munandar (2012), one of the characteristics of the high ability to think creatively is the ability to convey opinions / ideas. Thus, it can be concluded that the inability of students to provide problem-solving ideas shows the low ability of students to think creatively in that class.

Based on the data documentation that the authors collected while teaching the Vector Analysis material, it was found that the written test scores of the learning outcomes of physics for the last 3 (three) years about analyzing parabolic motion and circular motion using vectors, kinematics teaching material with vector analysis, it is known that the results of students' answers when working on questions in the form of descriptions, the ability to describe answers creatively, in detail, and precisely less than the standard values set after the learning process. the 2019/2020 school year the number of students who completed learning physics reached 59.23% with a class average score of 61.32. In the 2019/2020 school year, the number of students who completed learning physics reached 65.69% with a class average score of 60.57. In the 2019/2020 school year, the number of students who completed learning physics reached 61.92% with a class average value of 62.55.

The values obtained are still below the stipulated minimum completeness value (KKM). Observing the problems above, shows that in carrying out the physics

Method

Guided by the formulation of the problem and research objectives, the type of research to be carried out is Classroom Action Research, abbreviated as PTK. This classroom action research was conducted at SMA Negeri 1 Sidenreng Rappang Regency. The time for conducting the research is in the odd semester of the 2019/2020 academic year. The research subjects were 35 class IA-1 students for the 2019/2020 academic year, consisting of 14

learning process, a plan is still needed that can improve creative thinking skills and student learning outcomes in understanding the material being taught both individually and in groups. To improve this condition, one of the real efforts that teachers can do is to take an action in the form of a problem solving approach in the classroom. This action is done by a teacher and can run well if the learning process is followed by the use of interrelated learning models. The use of this learning model is the Creative Problem Solving (CPS) model.

The use of the appropriate CPS learning model will have an impact on the problem solving approach in the learning process so that the Physics material that will be taught and learned by the teacher through good delivery and communication is expected to provide more opportunities for students, open insights into creative thinking to understand and solve problems. faced. Students are no longer bored learning Physics, even students who previously hated this subject become excited and start to like Physics little by little. (Hikmah and Natsir, 2009). Myrmel (2003) said that Teachers should spend time discussing the thinking process. This would help students to begin to "think about thinking." Students learn about facts and figures from a young age and need to be exposed to creative problem solving styles of thinking. The statement illustrates that in certain learning, the use of creative problem solving provides a solution for teachers to help creative students learn to understand facts and pictures in solving problems.

male students and 21 female students. The object of this research is the CPS approach which is applied in the physics learning process in class XI IPA-1 SMA Negeri 1 Pangsid, Sidenreng Rappang Regency for the 2019/2020 Academic Year. In this study the data were processed using descriptive statistical analysis. The data analysis techniques that the researchers conducted are described as follows. The techniques used to determine the increase in students' creative thinking abilities and learning outcomes of Physics with the CPS

approach after the pretest, posttest cycle I, and posttest cycle II were implemented and the techniques used to determine the increase in student group activity and Teacher activities in learning physics based on the CPS approach are processed by means of the percentage of activities.

Result and Conclusion

Based on the results of preliminary observations with the acquisition of student scores, the lowest score was 35.00 and the highest score was 66.50 with an average value of 52.34. Only two students (5.26%) scored above the minimum completeness criteria (KKM) set at 67.50. The low learning outcomes of class X A-1 students of SMA Negeri 1 Pangsid, Sidenreng Rappang Regency cannot be separated from the teaching and learning process and student characteristics. The teaching and learning process can provide student learning outcomes well if students are given the opportunity to use their creative thinking skills. Characteristics of class IA students of SMAN 1 Sidenreng Rappang Regency for the 2019/2020 academic year, in general, learning activities are low, students' mathematical abilities are also low, the ability to think creatively in solving a problem is also low. Learning Physics requires students to carry out activities by searching, giving opinions of information creatively so that they can solve problems both at school and in the community.

Students' creative thinking skills in learning Physics from the test cycle I had the lowest score 41.67 and the highest score 83.33 with a classical average of 66.19 while the results of the second cycle test had the lowest score of 66.67 and the highest score was 91.67 with a classical average. 77.38. The result of the N-

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gain analysis is 0.30. This means that the effectiveness of learning in cycle II succeeded as expected because it had increased during the first cycle test (as a pretest) and the second cycle test (as a posttest). After the second cycle test the ability to think creatively in aspects 1) student fluency 57.15%, aspect 2) student flexibility 63.75%, aspect 3) student authenticity 60.15%, aspect 4) detailing students 64.15%, and aspects 5) reformulation of students 62.75%.

The results of students' physics learning after the second cycle were implemented using the CPS approach, it was found that 29 (twenty nine) students (82.86%) obtained scores above the KKM set at 67.50. Or it can be said that there were 29 students who were declared complete in cycle II thus there was an increase compared to cycle I where only 23 students scored beyond the KKM.

Conclusion

In conclusion, the implementation of learning with the CPS approach resulted in a very high percentage of learning. The increase in physics learning outcomes can be seen from the increase in the number of students who completed 12 (twelve) people in cycle I to 29 (twenty nine) people in cycle II with an average learning outcome of 77.38. The N-gain in the first cycle is 0.19 and the N-gain in the second cycle is 0.50. On average, in the first cycle it was 64.80% in the activity category, which was quite an increase in the second cycle of 77.3%. Fluency in giving response 62.33%, flexibility in presenting various kinds of problem solving 69.71%, authenticity sparking ideas 58.14%, detailing problems through 65 % steps, and reformulating a problem 67 %.

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