

Improved Math Learning Outcomes with Creative Problem Solving Model in Elementary School Students

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Abstract

This research aims to improve the mathematical learning outcomes of elementary school students with a creative problem solving model. Methods used mix method approach with classroom action research. Classroom action research is deenisikan as a process of assessment of various learning activities carried out through four (4) stages which include: planning, implementation of actions, observation / collection of data, and reflection. Furthermore, these stages are arranged in a cycle of activities. The subject in this study was a student of class V Tunas Bangsa Kota Makassar which consisted of 30 students. The results showed that in cycle I the average score of student learning outcomes was 64.71 with a classical completion of 56.67% there was an increase in cycle II with the average score of student learning outcomes which was 87.75 with a classical completion of 93.33%. The results of learning cycle I to cycle II increased to achieve the classical completion indicator that is $\geq 80\%$ of all students with $KKM \geq 70$. This shows an increase in elementary school math learning outcomes with a creative problem solving model.

Keywords

Creative problem solving;
learning outcomes



I. Introduction

Various educational problems in Indonesia are quite a lot, ranging from curriculum problems, quality, and competence, even leadership competence both in the upper and lower levels. National education goals are expected to be realized through schools by maximizing all components in it. Learners are expected to have competent personalities in various fields and abilities other than learning activities. Compounds that have a significant influence one of them in the formation of student character, namely learning activities, especially in math learning by applying the creative problem solving model. (Helie, S., & Sun, R. 2010)

Education is an effort given to children both in the form of help, influence, and protection to form the maturity of children and capable in carrying out tasks and solving their own life problems. Education is considered to have a very important role in promoting the civilization of a nation. Good quality education can encourage the creation of a quality society, creative and productive until finally able to achieve welfare. Through this national education system, the government should be able to ensure equal distribution of educational opportunities, as well as the relevance and efficiency of education management to face challenges in line with the changing demands of local, national and global life. The budget allocation system for education in Indonesia is heavily influenced by government policies. (Saputra, A. 2018)

Creative Problem Solving (CPS) is a framework used by a person or group in formulating a problem, facing challenges, opening opportunities, and being able to generate and analyze a variety of new options; and be able to plan effective implementations to implement existing solutions or take new actions as an option. (Akmal, N., & Saputra, E. 2018)

Creative and critical thinking skills are involved in interacting with the Creative Problem Solving model. Using cps effectively will require the use and mastery of several skills such as metacognitive skills and skills in task assessment.

During the Covid-19 pandemic, students are expected to learn by not ignoring health protocols that are one of the government regulations in preventing the spread of Covid-19. The Education System must transform from all parties both from learners and from teachers so that we can make the leap to improve education. Learning in pandemic and new normal times, students need to have a new perspective and hone skills, improve their quality, build creativity, be able to innovate, and with patterns of interaction using technology with changes in systems and conditions. (Fahruni, F. E., & Warsito, H. 2021)

The fundamental problem during the Covid-19 pandemic is how students can continue to learn well even at home. Because learning is the main means for students to be able to grow and develop optimally and be able to compete in the world of education. (Nasution, E. 2016)

Learning is expected to continue comfortably and pleasantly for all learners both with online learning, especially for teachers and students. At this time in some schools have started to do limited face-to-face learning with the condition of following vaccinations and running health protocols well. So that you can apply a creative problem solving model in schools to improve math learning outcomes. (Wibowo A, & BNPB, K. P. D. I. and K. K. 2020)

Students always assume that learning mathematics is a very difficult learning so that this becomes one of the problems found for it needs to get more attention and specialized and is often the biggest focal point among teachers, students and parents. Because of these problems, children often feel a negative impact on math learning and can interfere with students' learning mentality.

There will be many complaints and impacts caused by the problem that causes students to be afraid of math teachers, students become lazy to take math lessons, can even get to the stage where students hate math lessons. Math learning that occurs in Tunas Bangsa Elementary School also feels obstacles, difficulties and saturation in the learning process so that students are less active marked by low student math learning outcomes not as expected.

This study applies the use of Creative Problem Solving that is descriptive, flexible, dynamic, and away from the model of traditional learning steps or stages. For that, it is offered a learning model that is able to make students think productively, creatively, and able to solve problems that can be used well and successfully by students, thus improving the learning outcomes of elementary school students.

II. Research Methods

This type of research is a class action research (PTK) where the study is based on a cycle, where each cycle consists of four stages 1) planning, 2) implementation, 3) observation / data collection and 4) reflection. This research was conducted at SD Tunas Bangsa Kota Makassar. The study subjects consisted of class V teachers and V students consisting of 30 students with 18 women and 12 men. Implementation procedures in accordance with the stages of PTK in each cycle.

In the planning stage, researchers and teachers formulate and plan learning that will be done at each meeting, namely RPP with creative problem solving learning model, teacher activity observation sheet and student activity and learning outcome test instrument to measure student learning outcomes after creative problem solving is applied.

The implementation stage at this stage is carried out based on formulas and designs that have been done before, in the learning process in accordance with the RPP where teachers use creative problem solving learning models.

The observation stage, observation to measure teacher activity and student activity, was carried out during four meetings to observe, observe, record and document learning activities and at the last meeting was given a learning test.

The reflection stage is the final stage of each cycle to see the various shortcomings of learning activities that have been implemented, based on these shortcomings there are discussions for improvements to be implemented in the next cycle.

The data needed in this study are: 1) teacher activities, 2) student activities and 3) learning outcomes, techniques used to collect such data based on observations and tests of learning outcomes. Based on these results to measure the learning outcomes of elementary school students against the progress of learning in each cycle.

Data analysis techniques used in the form of quantitative in the form of numbers obtained based on the results of observations of teacher activities at the time of learning, the results of observation of student activities and learning outcomes. Where the results of observation of teacher activity are at least in the good category, minimum student activity is in the good category and the minimum learning outcome is in the good category, and is said to be completed classically $\geq 80\%$ meet the elementary school Mathematics learning KKM with a score of 70.

III. Results and Discussion

Class action research conducted at SD Tunas Bangsa Kota Makassar is carried out through four stages which include: planning, implementation of actions, observation / collection of data, and reflexes for each cycle. This study consists of two cycles in which each cycle consists of four meetings.

3.1 Cycle I

The results of cycle I observations are carried out four times in math learning with the creative problem solving learning model and the last or fourth meeting with the learning outcome test, to find out the improvement of mathematics learning outcomes with the creative problem solving model. As for teacher activities, student activities and learning outcomes cycle I as follows:

1) Teacher activities

Based on the results of observations of activities or learning processes carried out by teachers by applying the creative problem solving learning model in cycle I, at the

first meeting to the fourth meeting with an average score of 2.31 is in the category quite in accordance with the criteria of teacher activity. This shows that at the time of the learning process from each meeting experienced an increase in teacher activity, but the implementation of learning carried out has not been optimal, because the teacher has not mastered the learning model and has not been maximal in encouraging students to be creative in the learning process.

2) Student Activities

Based on the results of observations of student activities during the learning process with the creative problem solving learning model in cycle I, at the first meeting to the fourth meeting with an average score of 2.27 is in the category quite in accordance with the criteria of student activity. This shows that at the first meeting until the fourth meeting student activity has increased, but not optimal because students have not been enthusiastic in solving problems.

3) Learning Outcomes

Data analysis after learning using the creative problem solving learning model in cycle I, the learning outcomes of elementary school students after applying the creative problem solving model are as follows:

Table 1. Distribution of Completion of Cycle I Learning Outcomes

Number	KKM Value	Frequency	Percentage	Information
1	≥ 70	17	56,67%	Done
2	< 70	13	43,33%	Not Complete
Sum		30	100%	
Maximum Value			87	
Minimum Value			58	
Average			65,71	

Based on the table above shows that after applying the creative problem solving learning model in cycle I there was an increase in the results of mathematics learning of elementary school students consisting of 30 students who took the learning results test there were 17 students (56.67%) completed achieving KKM score of 70 and there were 13 students (43.33%) who did not complete the value less than KKM. The highest score of 87 while the lowest score of 58 with an average score of 30 students of 64.71 is in the sufficient category. This indicates that it has not achieved the classic completion of the $\geq 80\%$, so reflection and improvement are carried out so that it continues into cycle II.

3.2 Cycle II

After reflection and improvement on cycle I, there is an increase in teacher activity, student activity every meeting. As for teacher activities, student activities and learning outcomes as follows:

1) Teacher activities

Based on the results of observations of activities or learning processes carried out by teachers by applying the creative problem solving learning model in cycle II, at the first meeting to the fourth meeting with an average score of 3.78 is in the category very well in accordance with the criteria of teacher activity. This shows that at the time of the learning process from each meeting experienced an increase in the teacher's activities in the learning process.

2) Student Activities

Based on the results of observations of student activities during the learning process with the creative problem solving learning model in cycle II, at the first meeting to the fourth meeting with an average score of 3.89 is in the category very well in accordance with the criteria of student activity. This shows that at the first meeting until the fourth meeting the student's activities in learning activities have increased and students are antusias in the learning process.

3) Learning Outcomes

Data analysis after learning using the creative problem solving learning model in cycle II, the learning outcomes of elementary school students after applying the creative problem solving model in cycle II are as follows:

Table 2. Distribution of Completion of Cycle II Learning Outcomes

Number	KKM Value	Frequency	Percentage	Information
1	≥ 70	28	93,33%	Done
2	< 70	2	6,67%	Not Complete
Sum		30	100%	
Maximum Value			95	
Minimum Value			68	
Average			87,75	

Based on the table above shows that after applying the creative problem solving learning model in cycle II there was an increase in the learning outcomes of mathematics elementary school students consisting of 30 students who took the learning results test there were 28 students (93.33%) completed achieving KKM score of 70 and there were 2 students (6.67%) who did not complete the value less than KKM. The highest score of 95 while the lowest score of 68 with a grade point average of 30 students of 87.75 is in the excellent category. This shows that the results of learning Mathematics with a creative problem solving model achieve a classical completion of the $\geq 80\%$. So that the creative problem solving learning model can improve the learning outcomes of mathematics elementary school students.

Research conducted over two cycles with each cycle consisting of four meetings, in cycle I, from the first meeting to the fourth meeting has not met the criteria of classical completion, thus continued to cycle II by reflecting and improving from cycle I, so that in cycle II from the first meeting to the fourth meeting has increased so that it is classically completed. This shows that by applying a creative problem solving learning model improves the learning outcomes of mathematics elementary school students.

IV. Conclusion

Based on the results of research and discussion, it can be concluded by using a creative problem solving learning model can improve the learning outcomes of Mathematics class V elementary school on fractional material, this is seen guru activity in each cycle has increased, student activity increases in each cycle and mathematics learning results have increased in each cycle meet KKM and achieve the classical completion criteria $\geq 80\%$ namely 93,33%. This shows that creative problem solving learning models can improve the learning outcomes of elementary school students.

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