Implementation of Step Polya in the Problem based Learning Model to Improve Learning Outcomes in Elementary School

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Abstract. The purpose of this research is to describe the application of Polya step in Problem Based Learning Model to improve learning outcomes about the story of the addition of fractions in the fourth grade SDN 27 Sungai Geringging Kabupaten Padang Pariaman. Research subjects were teachers (practitioners) and 16 students. The type of this research is classroom action research. Based on the results of the study, that learning using Polya step in Problem Based Learning Model can improve learning outcomes about the story of the addition of fractions at SDN 27 Sungai Geringging Padang Pariaman district, Namely (a) Observation of RPP 87.5% (B) becomes 92.89% (SB). (b) Teacher aspect 77.78% (B) becomes 94.44% (SB). (c) Student aspect 77.78% (B) becomes 94.44% (SB). (d) Student learning outcomes 76.97 becomes 87.48.

Keywords: Polya Step, Problem Based Learning, learning outcomes, word problem

1. Introduction

One of the learning mathematics that can train and develop students' problem-solving abilities is learning story problems. Learning this story in elementary school has some material. One of them is the fraction addition material. This material was studied by students in grade IV of elementary school (SD) [1]. The material of story problems related to the sum of these fractions is found in the Competency Standard (SK): 6. Using fractions in problem solving, Basic Competence (KD): 6.5 solving problems related to fractions [2]. Solving the problem of fraction addition material in the form of story questions must have been mastered by students, because this material is often encountered by students in their daily lives.

One learning model that meets the demands of learning mathematics in SD is the Problem Based Learning (PBL) model. Problem Based Learning Model (PBL) is a learning model that uses real problems in everyday life in the learning process [3]. This model is certainly very suitable for use in learning story problems, especially in fraction addition material. this is in accordance with Moffitt's opinion [4] argues that "Problem Based Learning (PBL) is a model that uses real world problems as a context for students to learn about critical thinking and problem solving skills and to gain knowledge and the concept of the essence of the subject matter"[5].

In order for student learning outcomes to be more optimal, the researcher combined the PBL model with the steps to solving the problem in the learning process[6]. Merging can be done because the PBL model contains steps that are coherent with the problem solving process[7][3]. The problem solving step in question is the policy problem solving step. This is supported by the opinion of [8] which states that "learning with the PBL model contains steps that are coherent with the problem
solving process”. The use of Polya's problem solving steps in learning story problems aims to facilitate students in solving story problems in fraction addition material while learning using PBL models.

2. Methodology

The type of research used in this study is classroom action research. Class action research is research carried out in the classroom. According to [9] "Class Action Research is an examination of learning activities in the form of an action, which is deliberately raised and occurs in a class together”.

This research was conducted in the second semester of the 2016/2017 school year. This research has been carried out in two cycles. The first cycle was conducted in 2 x meetings and the second cycle was conducted in x meetings. The first cycle of the first meeting was held on Monday 06 March 2017 at 07.30-09.15 WIB, the first cycle of the second meeting was held on Wednesday 08 March 2017 at 07.30-09.15 WIB. While cycle II is held on Monday March 13 2017 at 07.30-09.15 WIB.

3. Research Result

Cycle I

In the first cycle the study was conducted in 2 x meetings. The first meeting was held on Monday March 6 2017 at 07.30-09.15 WIB and the Second Meeting was held on Wednesday, March 8, 2017 at 07.30-09.15 WIB. The study was conducted in accordance with the plot that has been made, namely: 1) planning, 2) implementation, 3) observations, and 4) reflection.

Cycle II

In the second cycle only 1 meeting was conducted. Cycle II will be held on Monday, March 13, 2017 at 07.30-09.15 WIB. The study was conducted in accordance with the plot that has been made, namely: 1) planning, 2) implementation, 3) observations, and 4) reflection.

4. Discussion

Planning is absolutely necessary so that learning does not deviate from the goals to be achieved. The planning in question is in the form of RPP (Learning Implementation Plan). Kunandar [10] explains that what is meant by a Learning Implementation Plan (RPP) is "A plan that describes the procedures and organizing learning to achieve a basic competency set out in the Content Standard and described in the syllabus”.

5. Implementation

Implementation of learning in the first cycle according to what has been planned, which in the first cycle of learning is presented in 2x meetings. The first meeting is held for 3 x 35 minutes, and the second meeting is 3 x 35 minutes. Based on the discussion of the researcher with the fifth grade teacher of SDN 27 Sungai Geringging, Kabupaten Padang Pariaman, during the learning process the problem of summarizing the fractions using Polya's steps in the Problem Based Learning model was found as follows: can find out the answer to the problem, (2) the teacher does not explain how to complete the group discussion sheet provided, tells students to understand the problems that exist in LDK carefully, (3) the teacher does not provide guidance and supervision of students in working on solving fractions. Efforts to improve the above deficiencies are carried out in the second cycle, so that in the second cycle these deficiencies can be overcome.

Based on the data from the observation aspects of the teacher and students in the first cycle of meeting I obtained a score of 26 from a total score of 36, with a percentage of 72.22% included in sufficient qualifications. Furthermore, in the first cycle of meeting II a score of 30 was obtained from a total score of 36, with a percentage of 83.33% included in the good qualifications. This proves that there has been an increase. Efforts for improvement carried out in cycle II have produced results, where the score obtained on the teacher aspects and aspects of students in the second cycle is a score
of 34 with a percentage of 94.44% with very good qualifications.

Based on the presentation of the data presented above, it can be concluded that the results of learning the fraction addition story using the Polya step in the Problem Based Learning model in class IV SDN 27 Sungai Geringging, Padang Pariaman Regency have been achieved with predetermined criteria, namely the student completeness 75%. The expected level of completeness is based on the opinion of Kunandar (2011: 149) which states "The ideal criteria for completeness for each of the Basic Competencies is 75%". This means that research stops in cycle II and does not continue in the next cycle.

6. Conclusions and Suggestions

From exposure to data, research results, and discussion as described above, the conclusions that can be drawn from this research are as follows: Planning learning of fraction using story problems using Polya steps in Problem Based Learning Model in class IV SDN 27 Sungai Geringging, Kab. Padang Pariaman is stated in the form of RPP. RPP observation in the first cycle of meeting 1 obtained a percentage value of 85.71% and the first cycle of meeting 2 received a percentage value of 89.28%. The average percentage value obtained in the first cycle is 85.71% with good qualifications. Furthermore, the observation results in the second cycle were 92.86% with very good qualifications. It can be concluded that the results of planning observations have increased by 7.15%.

The implementation of fraction addition story learning using the Polya step in the Problem Based Learning Model in Class IV SDN 27 Sungai Geringging Kab. Padang Pariaman consists of initial activities, core activities, and final activities. The observations of the implementation of both the activities of teachers and students in the first cycle of meeting 1 obtained a percentage value of 72.22% and the first cycle of meeting 2 received a percentage value of 83.33%. The average percentage value obtained in the first cycle is 77.78% with good qualifications. Furthermore, the results of observations in the second cycle were 94.44% with very good qualifications. It can be concluded that the implementation has increased by 16.66% both from the teacher and student level.

Student learning outcomes in the learning of fraction addition story problems using the Polya step in the Problem Based Learning Model in Class IV SDN 27 Sungai Geringging Kab. Padang Pariaman obtained a class average of 73.33 in the first cycle of meetings 1 and 80.78 in the first cycle of meeting 2, thus the class average in the first cycle was 76.97. In the second cycle the average grade obtained is 87.48. Thus, it can be concluded that the Implementation of the Polya Steps in the Problem Based Learning Model can improve the learning outcomes of the fractions in the fourth grade SDN 27 Sungai Geringging District. Padang Pariaman.

Based on the conclusions above, the following can be suggested: In planning (RPP), it is suggested to the teacher to pay attention to lesson plans and learning activities as well as possible so that the implementation of the learning process can run well. In the implementation of learning, it is recommended to the teacher to carry out all teacher activities in accordance with the planning. On learning outcomes, it is suggested that the teacher must be able to process student assessment data that have been obtained from the results of observations in the implementation of lesson plans, the results of observing teacher aspects, observing aspects of students and student learning outcomes both from cycle I and cycle II.

7. References

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