



## **Application Model Problem Based Learning To Improve Learning Outcomes Class II Elementary School**

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**Abstract.** This Research aims for increasing of learn result at second grade SDN 2 Dukuhmaja which has eleven students on fractions material with teacher's effort on planning and doing teaching-learning process using Problem Based Learning model. It because of class condition with the problems (2) learn result of math was low specifically in fraction material with classical mastery 45,4 %, (2) low of using variation on method and model in teaching, (3) limited for availability of media, tools and infrastructure which support learning process. Based on the research obtains learn result from student's comprehension in first cycle classical mastery get 63,6% with seven students completed and four students uncompleted. In second cycle, classical mastery reaches 100 % with eleven students completed. As for measuring teacher's skills for planning in first cycle get 3.5 score and 3,8 score in second cycle with really good category. While for doing teaching learning process in first cycle get 3 score and second cycle get 3,5 with really good category. This research projecting in order that implementation of Problem Based Learning model in classroom action research should pay attention in each step and increase so many references for used in learning.

**Keywords:** learning, problem-based learning, learn result

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### **INTRODUCTION**

Learning is a process of interaction between students and educators with a variety of activities that are deliberately designed so that students can have abilities in accordance with curriculum standards both in terms of cognitive, affective and psychomotor (Djamaluddin & Wardana, 2019). In the 2013 curriculum, learning is packaged with themes that combine several subject concepts to be able to provide ease of learning for students (Wahyuni et al., 2016). The application of thematic learning is also assessed according to the stage of child development, child characteristics, learning concepts and meaningful learning for the lives of students (Hidayani, 2016). The contents incorporated in class II are Mathematics, Indonesian, Cultural Arts and Crafts, Civic Education and PJOK. In other words, thematic

learning is a money effort made to be able to combine various concepts by paying attention to the characteristics of students.

According to Sulhan & Khairi (2019), thematic learning has the following characteristics: (1) learner-centered, (2) provides direct experience, (3) subject separation is not very clear, (4) presents concepts from various subjects, (5) is flexible, and (6) learning outcomes can develop according to the interests and needs of students. This is certainly closely related to how the role of teachers to be able to optimize themselves in accordance with the curriculum as an instrument that applies to measuring the quality of education. Teachers need to understand the condition of students in order to be able to get the maximum teaching and learning process (Djamiluddin & Wardana, 2019). So that the role of teachers must have the ability to plan and implement how thematic learning to provide unity of meaning related to the contextuality of students' daily lives.

Teachers play an important role to be able to determine the success of learning from students. As in the 2013 curriculum, teachers act as facilitators where the approach used encourages participants to be more active, namely the scientific approach (Mungzilina et al., 2018). Success in increasing children's activities also cannot be separated from the maximum contribution from teachers to create an atmosphere that fosters passion for learning, increases student achievement, by organizing the learning process optimally (Anisa & Sjamsir, 2021). However, the implementation of this thematic learning still raises many diverse gaps. As can be seen from the benchmark assessment of education quality conducted by PISA (in Pratiwi, 2019) states that Indonesia is ranked 64 out of 69 countries that are members of the Organizations for Economic Cooperation Development (OECD) with assessments on aspects of literacy, numeracy and learning environment.

Low learning outcomes of students are influenced by various factors. This encourages teachers to be able to make changes and compile learning designs that are in accordance with the characteristics of students, where they are in the concrete operational phase at the age of 7-11 years. So that the learning process needs to present concrete objects that can build students' knowledge and experience as a form of accommodation from the mental thinking process (Nurhairunnisah, 2017). In addition, Yasin & Enver (in Qomalasari et al., 2021) say that before explaining new subjects, the prerequisite concepts of those subjects should be clarified, and then possible difficulties about these concepts should be determined and eliminated. This will affect the mastery of separate Mathematics learning at the next level,

so that the gaps that occur at each level need to be taken immediately so as not to cause more complex gaps.

As for the learning conditions based on preliminary studies in grade 2 of SDN 2 Dukuhmaja, researchers found several gaps that showed (1) low learning outcomes in the content of Mathematics fractional number material with classical completeness as much as 45.4% with 5 students who met the KKM score and 6 students who were incomplete, (2) the lack of variation in the use of methods and models in teaching tended to use one source book that became a companion book for students, and (3) limited availability of media and facilities and infrastructure that support the learning process. At the grade II level, students have competency demands for knowledge to recognize fractional numbers from concrete objects contained in Theme 7 of Class II Togetherness. However, students are not given the learning experience to experience directly which indicates the unfulfilled characteristics of thematic learning itself. This condition encourages researchers to be able to make efforts to improve learning outcomes by making students the center of learning.

According to Muhajarah & Rachmawati (2019) stated in the results of their research that the absorption ability of each student in learning is influenced by learning experience, mode, modality and learning style. This is in accordance with Edgar Dale's theory which shows that being involved / experiencing directly has the highest presentation to be able to invite students to be involved mentally, physically, emotionally and also intellectually systematically (Gani Ali, 2014). Therefore, to solve the gap that occurs, researchers need to pay attention to the characteristics of students. One of the efforts made is to detect the learning modalities of students in the classroom which get a percentage of 82% have kinesthetic learning modalities. Thus, researchers design learning steps to be able to accommodate the gaps that have been described by the application of a learning model, namely with the problem-based learning (PBL) model.

Improving learning outcomes using PBL has been carried out by several researchers, such as what was done by Samsiah (2022) with the title "Improving Learning Outcomes of Grade II Students Ablution Material with a Problem Based Learning Model at SD Negeri 1 Batu Nindan" that with PBL classical completeness student learning outcomes have increased from cycle I to 52.94% and cycle II to 94.12%. In addition, improving learning outcomes on certain content in thematic learning has also been carried out by Yusita et al. (2021) with the title "Problem Based Learning Model Improves Thematic Learning Outcomes of Indonesian Lesson Content". The results showed that in cycle I 63.93 with the

low category, so the study continued to cycle II with an average learning outcome of Indonesian 79.82 with the high category. Therefore, some of the results of this study project opportunities for improving student learning outcomes in Grade 2 Mathematics content at SDN 2 Dukuhmaja using PBL.

Based on this, researchers are interested in being able to apply the PBL model as an effort made to improve learning outcomes in the content of fractional number mathematics material in Theme 7 Togetherness in grade II. Therefore, this study is expected to measure the ability of teachers to plan and implement learning and help in improving learning outcomes that pay attention to the characteristic conditions of students.

## **LITERATURE**

According to Dzulfikar (2012), Problem Based Learning is a learning model with a learner learning approach to authentic problems so that students can compile their own knowledge, develop higher skills and inquiry, independent students, and increase self-confidence. Problem Based Learning (PBL) is a learning model that encourages students to recognize how to learn and work together in groups to find solutions to real-world problems (Akca, 2009). PBL has the ability to train students in finding their own concepts based on real problems from life with inquiry skills so that the model is the highest-level model (Mugla, 2011).

Student learning outcomes are achievements achieved by students academically through exams and assignments, actively asking and answering questions that support the acquisition of these learning outcomes. According to Syaiful Bahri Djamarah and Aswan Zain in Supardi (2013), to find out the indicators of learning success can be seen from "student absorption and behavior that appears in students. The intended learning outcome is the achievement of learning achievement achieved by students with criteria, or values that have been set".

## **METHOD**

The method used is collaborative Classroom Action Research (PTK) with civil service teachers as collaborators. PTK has an important role in strategies to improve the quality of learning if implemented properly and correctly so as to form a culture learning for teachers to be able to evaluate and reflect on the learning process that has been implemented (Kunandar, 2013). PTK is a real-world practice intervention aimed at improving practical

situations. PTK aims to be able to improve and or overcome problems both about learning, personal and social problems experienced by students which were found before the study.

According to Arikonto (2013) stated that PTK activities include four steps, namely planning, implementation, observation and reflection. The description is as follows: (1) planning is carried out before conducting research including identification, analysis, problem formulation, formulation of action hypotheses to preparation for implementation; (2) implementation is part of the realization of the plan as well as observation; (3) observation to be able to observe any changes that occur in students during the learning process to obtain facts that can be used at a later stage; and (4) reflection is an activity of analysis, synthesis, interpretation, explanation to conclusion (Sukardiyono, 2015).

This research was conducted in March-April 2023 at SDN 2 Dukuhmaja Class II with 11 students, 5 boys and 6 girls. The data collection techniques used are observation, documentation studies, and tests. So that the research instruments used are observation sheets for the design of learning devices, observation sheets for learning implementation, documentation study sheets on learning tools used before, and test questions. The data processing techniques are by triangulating data and uplifting the percentage description classification as follows:

**Table 1. Category Classification Interval**

No.	Interval (P)	Score Weighting	Scale Likert
1.	Very decent/excellent/Totally agree	80-100%	4
2.	Decent/Good/Agree	66-79%	3
3.	Less Decent/ Less Good/ Less Agree	56-65%	2
4.	Not Worthy/ Not Good/ Disagree	0-55%	1

(Source: Ratnasari et al., 2020; Sugiyono, 2019)

Score weighting is calculated using the following formula:

$$P = \frac{S}{N} \times 100 \%$$

Information:

P = Sub variable percentage

S = Number of total scores of sub variables

N = Maximum total score count

As for the measurement of learning completeness in class, according to Trianto (in Royani, 2017), a class is said to be complete learning (classical completeness) if in that class there are  $\geq 85\%$  of students who have completed learning. Therefore, improving learning outcomes using PBL requires achieving classical completeness of  $\geq 85\%$  of students who

have completed it to be successful. So that individual success indicators with a minimum score of 70 and classical  $\geq 85\%$ .

**DISCUSSION**

After observing the implementation of classroom learning on Monday, March 21, 2023, it was found that the learning outcomes in the pre-cycle showed a classical completeness presentation of 45.4% with 5 students who were completed, and 6 students who were not completed. Researchers compile learning designs according to learning syntax. Cycle I will be held on Tuesday, April 4, 2023 and cycle II will be held on Thursday, April 13, 2023. Table 2 shows the results of the assessment of teachers' ability to plan using lesson study observation sheet format instruments. Based on table 2, it can be seen that the teacher's ability in cycle I obtained a score of 3.5 and cycle II obtained a score of 3.8. The difference in score obtained is 0.3. This average score falls into the excellent category.

Meanwhile, the results of research on the ability of teachers to carry out learning can be seen in table 3. Based on table 3, it is known that the teacher's ability to carry out learning has obtained a graded score with three aspects including the beginning, core and closing activities in learning. Cycle I obtained an average score of 3 and cycle II received a score of 3.5. There is a score difference of 0.5. This score falls into the excellent category. The acquisition of learning outcomes from the learning process can be seen in table 4. Based on table 4, it is known that in the first cycle of classical completeness obtained a percentage of 63.6% with a grade average of 72.7 which reached a minimum average. However, its classical completeness has not reached the predetermined standard. The composition is 7 students complete and 4 students incomplete. While in the second cycle classical completeness reached 100% with all students completed with an average score of 90.5.

**Table 2. Results of Observation of Teacher Ability in Learning Planning**

No.	Observed aspects	Cycle	
		Cycle I	Cycle II
1.	Minimum Component Completeness	3	4
2.	Essential and Meaningful	3	3
3.	Continuous	4	4
4.	Contextual	4	4
5.	Simple	4	4
6.	Supporting Components	3	4
Score Total		21	23
Average Score		3,5	3,8

**Table 3. Observation of Teachers' Ability to Carry Out Learning**

No.	Observed aspects	Cycle	
		Cycle I	Cycle II

1.	Initial Activities:		
-	Perception & Motivation	3	4
2.	Core Activities:		
-	Suitability of Teaching Materials	2	3
-	Source/Media Management	3	4
-	Learning Strategy	3	3
3.	Concluding Activities:		
-	Evaluation	3	3
-	Reflex	4	4
Score Total		18	21
Average Score		3	3,5

**Table 4. Recapitulation of Learning Outcomes**

No	Observed Aspects	Cycle I	Cycle II
1.	Number of Students	11	11
2.	Number of Values	800	1.040
3.	KKM	70	70
4.	Average rating	72,7	90,5
5.	Lowest Value	40	80
6.	Top Rated	100	100
7.	Number of Students Complete	7	11
8.	The Number of Students Has Not Been Completed	4	0
9.	Average Percentage of Completeness	63,6%	100%
10.	Category	Not Good	Excellent

Based on observations on pre-cycle activities, researchers plan according to gaps that have arisen. Research activities that have been carried out with collaborators for two cycles show the results of teachers' ability to plan and implement learning and the acquisition of learning outcomes in understanding the content of fractional number material. Researchers as grade II teachers conduct learning planning using the PBL model which has 5 learning syntax. This encourages researchers to elaborate learning steps by integrating the characteristics of students, the use of media and the achievement of learning objectives to make students actively involved in thinking mentally and physically. One of them is by accommodating the learning profile of students who are dominated by kinesthetics as much as 82% so that the percentage of activities is adjusted so that students are able to experience directly.

In the first cycle, researchers prepare a plan with learning tools that contain the following aspects: completeness of minimum components, essential and meaningful, continuous, contextual, simple and supporting components. So that the application of PBL is adjusted to these aspects, the following is the description: (1) the preparation of RPP by containing the completeness of minimum components and supporting components, (2) the use of interactive media with the TPACK approach to fulfill essential and meaningful

aspects, and (3) learning steps are arranged based on problems commonly found daily by students related to the theme of togetherness to contain contextual, sustainable & simple aspects.

In the application of PBL, researchers pay attention to the learning syntax of the predetermined model. The description is as follows: in phase 1 of orientation of learners to problems, researchers present contextual texts and images by paying attention to conformity with the theme of togetherness. This encourages the value and meaningfulness of how to divide food fairly. In phase II organizing students to learn using LKPD with the content of instructions and materials that can help students solve the problems at hand. Because in the application of PBL, the teacher acts as a facilitator. In phase III guiding individual and group investigations, researchers use interactive media to construct students' understanding, namely by using *PHET Simulation* into part of fractional numbers. In phase IV develop and present the results of the work, namely by completing the LKPD and presenting the process of solving the problem. Finally, in phase V analyze and evaluate the joint problem-solving process.

Furthermore, in the ability to carry out learning, there are several aspects that teachers pay attention to, which include the ability in the beginning, core and closing activities. Researchers make perceptions when starting learning with questions that are initial conditioning in Mathematics learning. As has been described that Mathematics is structured learning and requires *pre-conditionals*. It aims to provide contextual and meaningful things for students. In the core activities, researchers deliver teaching materials, measure the effectiveness of media use and learning strategies in dealing with students. According to collaborators, the preparation of teaching materials both explained and contained in LKPD is considered insufficient to build student understanding. Therefore, this is a record for researchers to be able to increase it in the next cycle. As for the closing activity, researchers conduct evaluations and reflections to measure the ability of students after following the learning process.

The implementation of learning in the first cycle is carried out simultaneously with observations of things that arise in the process of implementing PBL as a stage in PTK. Students are enthusiastic and eager enough to be able to follow the learning process. This is shown by learners being able to answer perceptions alternately with good, read problem-oriented texts, and share tasks and roles in groups. Researchers provide opportunities for each student to be actively involved in learning. In role sharing activities, students are

conditioned to be able to have their respective roles guided by LKPD. The score obtained from the teacher's ability device in the solution contained in the design of learning tools in the first cycle is 3.5 with a very good category. As for the ability to carry out learning, it gets a score of 3 which falls into the good category. The acquisition of learning outcomes to measure understanding has classical completeness as much as 63.6% with an average value of 72.7. The classification of learning outcomes is included in the category of poor even though the average class has reached KKM. Therefore, researchers need to reflect and compile a follow-up plan to improve the process that has been implemented in the first cycle.

Before carrying out cycle II, researchers reflect that there are various gaps that arise in students, so researchers and collaborators make conclusions and agreements as a form of reflection and follow-up plans for the next cycle. The conclusions and agreements on the learning process from cycle I, namely (a) in the learning planning process, teachers are considered to be able to plan learning well, (b) in the implementation process, teachers already have good abilities to carry out learning. However, students are not used to being the center of learning. (c) the ability of teachers to compile material in LKPD is still not good, so there needs to be improvements to be able to increase student understanding, (d) students are able to work in groups with the division of roles first to increase the effectiveness of cooperation attitudes in groups so that there is a need for a behavior modification approach during the learning process, (e) the use of media is attractive to students, however, students still feel hesitant when answering the questions given in *PHET Simulation* which shows that there is still a low understanding of students.

## CONCLUSION

Based on the results of research that has been conducted for two cycles, it can be concluded that: (1) the ability of teachers to plan learning using the PBL model increased from the measurement of cycle I 3.5 and cycle II 3.8. The difference in score obtained is 0.3 and the teacher's ability score is already in the very good category. (2) the ability of teachers to carry out learning using the PBL model also increased from cycle I with a score of 3 and cycle II to 3.5. The score difference is 0.5 which is a very good category. (3) The learning outcomes of fractional number content in class II have increased with the previous classical completeness by 63.6% to 100%.

This shows that classroom action research that has been carried out by applying the PBL model has succeeded in improving teacher abilities and learning outcomes of learners.

The advice from research that has been done for teachers as researchers in implementing PBL in the classroom, namely paying attention to each stage in PTK to get success from the gaps that occur and multiply references in the learning process. In addition, problem solving in PTK will provide new knowledge and experience on teacher competence.

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