IMPLEMENTATION OF PROBLEM BASED LEARNING: AN EFFORT ON ENHANCHING MATHEMATICS LEARNING ACHIEVEMENT OF ELEMENTARY SCHOOL STUDENT AT KLATEN REGENCY INDONESIA

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Abstract
The purpose of this study was to enhance students' mathematics learning achievement through the implementation of Problem Based Learning. This research was conducted at SD Negeri 1 Krajan, Klaten Regency, Indonesia in 2021-2022 academic year. The research subjects were 42 students from fifth grade students of SD Negeri 1 Krajan, Klaten Indonesia. The research method used was class action research with the individual action research type. The instrument used was written test with the muilple choice test. Research data were collected through students'tests result each first and second cycle. The data analysis technique was carried out using descriptive methods to determine the mean, median, mode, presenting class intervals and presenting them in tables. The results indicate that: 1) The implementation of the Problem Based Learning learning in the first cycle achieved the average value of 72.86. 2) The implementation of Problem Based Learning learning in the second cycle has increased with an average value of 97.56. 3) Implementation of Problem Based Learning learning can enhance students' learning outcomes by 45.24% with 100% passing percentage. Thus, it can be concluded that the implementation of Problem Based Learning model can enhance mathematics learning achievement for fifth grade students of SD Negeri 1 Krajan, Klaten Indonesia.

Key words: Implementation, Problem Based Learning, Enhanching, Learning Achievement.

INTRODUCTION

Mathematics lessons have a very important urgency to be taught by starting from the elementary school level to the next level where the learning process aims to equip students with logical, analytical, systematic, critical, and creative thinking skills (Minister of Education Regulations number 22 of 2006). Furthermore, Rismawati&Erni (2021) specifically explain that learning mathematics in elementary schools is taught to understand simple concepts to complex concepts to achieve deep mathematical understanding. Learning mathematics is identic with a learning concept because the correct teaching concept will affect students' mathematics learning outcomes and students' perspectives on mathematics lessons. This is emphasized by Hutagaol (2016) that the learning mathematicsprocess, the aspect of understanding a concept and its application is something that really needs to be mastered by students. Rismawati&Erni (2021) emphasize that if the basic concepts of learning mathematics are accepted by elementary school students, it will be difficult to improve again, especially if it has been applied in solving problems in answering questions. So that this condition causes students' interest and perception to view mathematics as a difficult subject (Melinda et al., 2021). One indicator of the success of students attending primary school education is that students are able to master basic skills such as listening, reading, speaking, writing, arithmetic and character cultivation (Andri et al., 2020 and Asrianti&Puswati, 2020).

Based on the results of previous studies that the ideal indicators above have not been achieved optimally where there are still many elementary school students who have difficult in understanding mathematics learning such as difficulty understanding teaching materials and working on math problems. The results of the research by Kholil&Zulfani (2020) revealed that the difficulty of students learning mathematics was caused by the wrong mindset that was built from the beginning by students, so that they had difficulty understanding the material presented by the teacher in the classroom. In addition to the problem of student thinking that is not correct, student difficulties in learning can be classified into two problems, namely internal problems and external problems (Arifin, 2020).

Subekti et al., (2021) describe internal factors come from within the students themselves while external factors come from outside the students themselves. Internal factors which cause student learning difficulties consist of student interests, motivation, talents and things which come from students and become obstacles for students to be able to participate in learning effectively. External factors consist of the learning environment, family support, learning methods or media applied in the learning process. The results of Asriyanti&Purwati's research (2020) show that student learning difficulties from internal factors are 55.93% while student difficulties influenced by external

factors are 59.2%. This resulted in 36% of students having difficulty mastering mathematics in the cognitive domain. Factors from outside themselves that most influence on student difficulties, student success, increase student learning outcomes or vice versa is the role of teachers in the classroom. Andri et al., (2020) revealed that the factor causing students' difficulties in learning mathematics is the lack of use of media which can support or clarify the material so that students easily understand the material presented. Learning media plays an important role in students' understanding of learning, especially students who have visualistic characters.

Another external factor is that the textbooks or learning handbooks owned by students or schools are too complicated for students to understand. The construction of the presentation of the material in the book is too complex and difficult, the layout and supporting images do not attract the attention of students and the content of the material is too dense so that it is difficult for students to understand it. The results of Asrianti&Purwati's (2020) research revealed that 72% of textbooks or student handbooks made it difficult for students to learn mathematics. In addition to these factors, electronic devices and media available at home are also external factors for students not to focus on learning and repeat learning at home. The electronic devices referred to by the researcher in this case are televisions and gadgets available at home. The results showed that 68% of the presence of television at home became a problem for students because they spent too much time watching TV so they forgot to study, especially repeating math lessons at home. This condition resulted in students' mastery of the cognitive aspects of mathematics lessons have not optimal (Sopian et al., 2021).

The focus of the problem in this study is the learning model applied by the teacher in the learning process has not been able to encourage students to be actively involved, resulting in low student learning outcomes. Based on the results of the pre-cycle, the average value of students in class V SD Negeri 1 Krajan, Klaten Regency, Indonesia was 37.86. The results of previous studies have revealed that the external factor that affects students' mathematics learning outcomes is the role of the teacher in the classroom (Bunterm et al., 2014., Khalaf and Zin, 2018., Lian Zhai, 2019., Gumilar, 2020., Andri et al. ., 2020., Sopian et al., 2021., Umbara et al., 2021., &Subekti et al., 2021). It was revealed that the learning method applied by the teacher in the learning process was less varied. This has an impact on students becoming passive learning participants in the classroom and tend to feel bored quickly in following the learning process. To respond to this problem, it is very important to implement Problem Based Learning to enhance mathematics learning outcomes for elementary school students. Problem Based Learning model is an innovation in learning because in the learning process students' thinking skills are really optimized through a systematic group or team work process, so that students can empower, hone, test, and develop their thinking skills on an ongoing basis (Rusman, 2013).

The problem-based learning model is based on cognitive psychology, so the focus of teaching is not so much on what students are doing, but on what they are thinking when they are doing the activity. In problem based learning, the teacher's role is more as a guide and facilitator so that students learn to think and solve their own problems. Problem-based learning finds its intellectual roots in the research of John Dewey (Ibrahim, 2000). John Dewey's pedagogy encourages teachers to encourage students to engage in problem-oriented projects or assignments and help them to investigate these problems. According to Sutikno (2014) said that the Problem Based Learning is designed to increase student learning activities in solving problems in groups. Student activities begin by identifying the problem, then looking for the most appropriate alternative as an answer to the problem. The ability to solve problems must be supported by the ability to reason, namely the ability to see causal relationships. Reasoning ability requires efforts to increase the ability to observe, ask questions, communicate, and interact with the environment.

The above explaining is in line with Rusman (2013) which states that problem-based learning known as Problem Based Learning is a student-centered learning strategy where students elaborate problem solving with everyday experiences. Problem-based learning is an innovation in learning because in the learning process students' thinking skills are really optimized through a systematic group work process, so that students can empower, hone, test, and develop their thinking skills on an ongoing basis. Rusman (2013) explains that the characteristics of problem-based learning are as follows:

1) Problems become a starting point in learning
2) The problems raised are problems that exist in the real world that are not structured
3) Problems require multiple perspectives
4) Problems, challenging students' knowledge, attitudes, and competencies which then require identification of learning needs and new areas of learning
5) Learning self-direction becomes the main thing
6) Utilization of various sources of knowledge, their use, and evaluation of information sources is an essential process in the learning process
7) Learning is collaborative, communication, and cooperative

8) The development of inquiry and problem solving skills is as important as mastering the content of knowledge to find a solution to a problem
9) Process openness in the learning process includes the synthesis and integration of a learning process
10) The learning process involves evaluating and reviewing student experiences and the learning process.

RESEARCH METHOD

The research design used was a class action research with the individual action research type. According to Sugiyono (2018) action research is a scientific way to obtain data with the aim of finding new problems and actions that can be used to solve problems, improve or improve work situations. To obtain effective and efficient action, the action is tested through several cycles, until a consistent action is found that can improve the situation. Meanwhile, individual action research is research conducted individually on social situations on a small scale such as in organization, production, and class.

The type of data in this study is quantitative data in ordinal form. Ordinal data is quantitative data in the form of rankings taken from measurement results (Sugiyono, 2019). The instrument used to collect data is a student learning outcome test in the form of multiple choice consisting of 4 choices. Data was collected through a written test at SD Negeri 1 Krajan, KlatenRegency Indonesia. Data were analyzed descriptively to describe and explain the improvement of student learning outcomes based on each cycles. The method used to analyze the data from this research is descriptive method. For quantitative data, it is analyzed by finding the mean, median, mode, and presenting it in tabular form. The data were analyzed to explain the results of the actions given in each research cycle and to compare the results of the actions given between one cycle and another. The research procedure can be seen below:

1. Planning

At this stage the researcher develops a Learning Implementation Plan in accordance with the provisions of the national curriculum policy at the elementary school level, namely a scientific and thematic-based learning plan. In developing problem-based scientific and thematic learning plans, the writer consulted with other teachers to create instruments and develop teaching materials. At the preparation stage, an agreement was made between the subject teachers. The design is carried out jointly between researchers who will take action with other teachers.

2. Actuating

The second stage was the stage of implementing the action carried out by learning in class V of SD Negeri 1 Krajan, Klaten Regency, Indonesia. At this stage, the researcher was active in taking action using the Problem Based Learning model. This learning designed has previously been carefully studied to be applied in the classroom according to the learning steps based on the syntax of the problem-based learning model. Learning scenarios were implemented effectively.

3. **Observing**

This stage actually runs concurrently with the implementation of learning. Observations were made when the action was running, so both took place at the same time. At this stage the teacher who acts as a researcher made observations and records all things that occur during the implementation of the ongoing learning. This data collection was carried out using student achievement tests, including the results of careful observations in the classroom from time to time and their impact on student learning processes and outcomes.

4. Reflecting

This stage is intended to thoroughly review the actions which have been taken, based on the data that has been collected, then an evaluation is carried out in order to perfect the next action. Reflection in research includes analysis, synthesis, and assessment of the results of observations of the actions taken. If there are problems from the reflection process, a review process is carried out through the next cycle which includes activities: re-planning, re-action, and re-observation so that the problem can be resolved.

RESEARCH RESULTS AND DISCUSSION

1. First Cycle Results

In order to apply the Problem Based Learning model in the first cycle, 4 meetings were held. Researcher made observations in the first cycle after the learning process using the Problem Based Learning model was completed in 4 meetings. The next step gave the exams to students to measure students' learning outcomes. The results of observations in first cycle can be seen in the following table below:

Table 1. Student Learning Outcomes of First Cycle

Criteria	Scores
Score Totally	3060
Evarage	72.86

Highset Score	100
Lowest Score	60
Median	60
Modus	60
Number of Students Passing	19
Number of Students Not Passing	23
Passing Percentage	54.76%

2. Second Cycle Result

In second cycle, the learning process was carried out for 4 meetings. Researchers try to improve the shortcomings and weaknesses that occur when carrying out the process of giving action in the previous cycle. Some of the important steps carried out can be described as follows. Researchers made observations in second cycle after the learning process using the Problem Based Learning model was completed in 4 meetings. The next step is the researcher gives exams to students to measure student learning outcomes whether there is an increase or not. The results of observations in second cycle can be seen in the following table below.

Table 2. Student Learning Outcomes of Second Cycle

Criteria	Scores
Score Totally	4110
Evarage	97.86
Highset Score	100
Lowest Score	80
Median	100
Modus	100
Number of Students Passing	42
Number of Students Not Passing	0
Passing Percentage	100%

3. Discussions

The results of the research in the first cycle have increased from the results obtained during the initial observation or pre-cycle. In the first cycle the number of students who achieved the minimum standard of completeness had increased, which was 19 people. That means that classical learning completeness has reached 54.76%%. Although there has been an increase in student learning activities in the first cycle, there are still many students who do not understand the teaching material thoroughly and directly there are still students who do not have the courage to express their knowledge and opinions directly. The number of students who look more active, the more students who dare to show their hands to answer the questions posed by the teacher. The results of data collection in the first cycle obtained an average student score of 72.86 indicating that the number of students had begun to increase in mastering the material being taught. These results indicate that there has been an increase in students' ability to master mathematics when compared to the initial value obtained previously.

The successes that have been obtained in first cycle are that students begin to take responsibility and work together in groups and help each other in solving assigned problems. By preparing student worksheets, it is easier for researchers to measure the abilities that students must master from the material being taught, students are also more patterned and structured in mastering the subject matter delivered. Learning problem solving is getting used to being done by students, students are used to solving problems that exist together with members of their discussion groups (Nurhayati and Yulianti, 2019). This is what makes students' ability to think higher. Students who have high-order thinking skills are able to solve problems effectively, think creatively, think critically, make decisions, generate new ideas, analyze information, and plan something for the future. However, 50% of the number of students still found difficulties in understanding patterns in doing math practice questions. Students still tend not to be confident in their understanding so that better actions must be given to improve student understanding.

The problem that still remains is that the learning outcomes achieved in first cycle have not met expectations in accordance with the demands of the success criteria set out in the study. Besides that, there are still 23 students who have not achieved the minimum passing standard in mathematics which is set at 75. The demand for indicators of success in this research must achieve classical completeness of 85%. However, in the first cycle, student graduation still reached 72.86% so that further improvement efforts still need to be made to achieve the above provisions. For this reason, it is necessary to do re-planning, re-action, re-observation, and more mature reflection to achieve better results in the next cycle.

After the researcher gave the action in second cycle, the results showed that the students' ability to follow the lesson was quite good. This means that the ability of students in mastering the subject matter of mathematics is proven to be increasing. The increase in students' mathematics learning outcomes is evidenced by the average score of 97.86. In this second cycle, the percentage of success has been obtained according to the demands of the indicator, which is 85% even exceeding the standard set where 100% of students get scores above the minimum completeness criteria set by the subject teacher.

The results of this study prove that the model applied in the learning process has a significant effect on the learning achievement of fifth grade students in mathematics. The achievements of students prove that the teacher has chosen the right learning model to convey the subject matter in the learning process carried out. The success of this research is also in line with what was found by Mashuri (2011) and Maharani (2019). Based on the results of his research, it was found that there was a significant effect between the use of problem-based learning methods on increasing students' ability to complete assignments and answer math problems both in groups and individually (Sholihah, 2010, Sanjaya, 2013. , and Putu & Bokhe, 2018). The use of problem-based learning methodscan help students grasp the material and affect the optimization of learning outcomes. In addition, problem-based learning methods can foster students' courage in explaining and relating teaching materials to the experiences or realities of life that they have experienced. Train students to be motivated, creative and critical of the problems presented by the teacher through exercises and exam questions (Syamsira et al., 2016 and Setyaningrum et al., 2020). Students are automatically trained to think quickly to understand the material and think logically how to solve a problem given by the teacher.

The ideal explanantion above is also in line with what was conveyed by Sanjaya (2013) that problem based learning can challenge students' abilities and provide satisfaction to find new knowledge for students, can increase student learning activities, help students how to transfer knowledge to understand problems in learning real life, and can help students to develop new knowledge and take responsibility for the learning they do. In group learning, students can transfer what they understand to colleagues in a group by using simpler language so that other students can understand it more easily (Harefa, 2021). The results of other studies also confirm that the application of problem-based learning models can improve students' mathematics learning outcomes through collaborative activities in a study group (Aspridanelet al., 2019 and Masruroh&Arif, 2021). In the learning process that takes place in class V of SD Negeri 1 Krajan, Klaten Indonesia, there is an increase in learning outcomes after students in each group can work together and communicate optimally where students who have better abilities can transfer their knowledge to other students in the group.

CONCLUSION
Based on the results of the research and discussion above, the results of this study can be concluded that:
1. The implementation of a problem-based learning model can enhance the learning outcomes of fifth grade students of SD Negeri 1 Krajan, Klaten Regency, Indonesia.
2. The average mathematics learning outcomes of fifth grade students of SD Negeri 1 Krajan, Klaten Indonesia, in the first cycle was 72.86 with a passing rate of 54.76%.
3. The average mathematics learning outcomes of fifth grade students of SD Negeri 1 Krajan, Klaten Indonesia, in the second cycle was 97.56 with a 100% passing rate.
4. The increase in mathematics learning outcomes for fifth grade students of SD Negeri 1 Krajan, Klaten Indonesia, from cycle I to cycle II was 45.24%.
5. The explanation of these results proves that the Problem Based Learning learning model is very effectively applied in the learning process to activate students, deepen understanding of concepts, provide meaningful understanding of the material and improve student achievement, as well as student collaboration in study groups, especially for mathematics lessons.

SUGGESTIONS
Based on the results of the research and the conclusions above, the suggestions are as follows:
1. For mathematics teachers at the elementary school level, considering that this model has been proven to be effective in enhancing students' learning achievement. So, it is recommended to apply the Problem Based Learning model in the learning process.
2. For other researchers, although this research has been able to prove the main effect of the Problem Based Learning model in enhancing learning achievement, it is certain that in this study there are still things which have not been perfectly done, therefore it is recommended to other researchers who are interested in researching the topic. The same way to examine the parts which have not been explored.

3. For education developers, to improve teacher creativity and professionalism, further research is needed to verify the data from this research so that the conclusions obtained are able to provide the validity of the overall use of the model.

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