

# **Application of the Problem Based Learning Model with the Assistance of Audio Visual Media in Improving Mathematics Learning on Whole Number Addition and Subtraction Material for Grade 3 Students of UPTD SDN 37 Barru**

**Sri Wiwiyanti J<sup>1</sup>, Taufiq Hidayat<sup>2</sup>**

Fakultas keguruan dan ilmu pendidikan, Universitas muhammadiyah makassar

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## **Abstract**

*This research uses a Classroom Action Research (PTK) approach which is carried out collaboratively. This research aims to determine the improvement in student learning outcomes in mathematics subjects regarding Whole Numbers in class III through the application of the Problem Based Learning (PBL) learning model. The subjects of this research were 12 students in class III at UPTD SDN 37 Barru, with a composition of 4 female students and 8 male students. The type of research is classroom action research with two cycles. Each cycle consists of planning, implementation, observation and reflection. Data collection techniques and tools in this research use descriptive analysis techniques for data in the form of student work documents, score lists and observation sheets. The results of this research show that using the Problem Based Learning (PBL) Learning Model can be a fun learning variation for students so that proven to improve student learning outcomes in Class III at UPTD SDN 37 Barru. After using the Problem Based Learning (PBL) learning model, students' learning outcomes only reached an average score of 81.66, then there was an increase after continuing in cycle 2, namely 86.25%. Therefore, the application of the Problem Based Learning (PBL) learning model can improve mathematics learning outcomes in whole number material.*

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## **Corresponding Author:**

**Sri Wiwiyanti J**

Fakultas keguruan dan ilmu pendidikan, Universitas muhammadiyah makassar

Email : [ysri23822@gmail.com](mailto:ysri23822@gmail.com)

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## **1. INTRODUCTION**

Curriculum is a set of plans and arrangements regarding objectives, content and learning materials as well as methods used as guidelines for implementing learning activities to achieve certain educational goals. According to the Big Language Dictionary, curriculum is defined as the arrangement of lesson content. Meanwhile, according to PP Number 32 of 2013 as an amendment to PP Number 19 of 2005 concerning SNP Curriculum is a set of plans and arrangements regarding objectives, content and learning materials as well as methods used as guidelines for implementing learning activities to achieve certain educational goals. The curriculum as a bridge to reach the goals of each educational unit is described in several lesson contents for schools. One of the lesson contents is mathematics. Mathematics is a universal science that underlies the development of modern science and technology, advancing human thinking and analysis. Mathematics is taught from elementary school age with the aim of training a person's thinking power, which makes them creative in solving problems, so that it can increase students' interest in

learning (Fadillah, 2016).

Mathematics learning for elementary school children is certainly a special strategy in implementing learning which is supported by the teacher's ability to plan and implement learning, thereby creating PAIKEM learning (Evandel et al., 2024). Mathematics has a very big role in life. Mathematics lesson content needs to be given to all students starting from elementary school, to equip students with the ability to think logically, analytically, systematically, critically, innovatively and creatively, as well as the ability to work together. These competencies are needed so that students can have the ability to obtain, manage and utilize information to live better in conditions that are always changing, uncertain and highly competitive. In carrying out learning mathematics, it is hoped that students should be able to feel the usefulness of learning mathematics.

The development of mathematics begins with human sensitivity and awareness or concern for understanding empirical phenomena encountered in everyday life. Basic concepts which then undergo expansion, justification, justification as well as generalization or formalization. Mathematical concepts are presented in clear and specific language. Mathematical language (used in mathematics) is very efficient and is a powerful tool for expressing mathematical concepts, reconstructing concepts or organizing a solution systematically after exploration, and especially for communication. This mathematical language is not ambiguous but short and clear. This is very necessary, especially when preparing a definition or theorem.

By studying mathematics, it is hoped that students can gain the following benefits:

1. The way of thinking in mathematics is systematic, through sequence order regular and specific. By learning mathematics, our brains get used to solving problems systematically. So that when applied in real life, we can solve every problem more easily
2. The way of thinking in mathematics is deductive. Conclusion withdrawn from general matters. not from something of a special nature. so that we can avoid thinking about drawing conclusions by "accident".
3. Studying mathematics trains us to become people who are more thorough, careful and not careless in our actions.
4. Studying mathematics teaches us to be patient people in facing all things in life. When we are working on problems in mathematics whose solutions are very long and complicated, of course we have to be patient and not give up quickly. If there are steps If you're wrong, try researching it again from the beginning. don't there are wrong numbers, maybe there is a wrong calculation.
5. What is no less important, there are actually many applications of mathematics in real life. Of course, in this world, calculating money, profits and losses, marketing problems, in engineering, in fact almost all sciences in this world definitely touch on what is called mathematics.

The content of mathematics lessons is specifically about the properties of arithmetic operations on whole numbers. The KKM that has been determined is 75. Based on the initial cycle 1 test that was carried out, the average score was 81.66. This is because teachers teach by using conventional methods which are dominant, such as the lecture method, communication is only one way, students are used to object listeners, Using learning media. To improve student learning outcomes, the learning model must be changed, one of which is by using the Problem Based Learning model. Problem Based Learning (PBL) is where teachers expose students to real life (authentic) and meaningful problem situations, facilitating students to solve them through investigation/inquiry and

collaboration, facilitating dialogue from various aspects, stimulating students to produce solutions and demonstrate results.

The Problem Based Learning (PBL) model or problem-based learning has the following characteristics:

1. The problem-based learning strategy is a series of learning activities, meaning that this learning does not expect students to just listen, take notes and then memorize the lesson material, but through a problem-based learning strategy, students actively think, communicate, search and process data and finally draw conclusions.
2. Learning activities are directed at solving problems. The problem-based learning strategy places problems as the keyword of the learning process. This means that without problems there is no learning process possible.
3. Problem solving is carried out using a scientific thinking approach. Thinking using the scientific method is a deductive and inductive thinking process. This thinking process is carried out systematically and empirically, systematic means scientific thinking is carried out through certain stages, while empirical means the problem-solving process is based on clear data and facts.

The advantages of the Problem Based Learning model are:

1. With the Problem Based Learning model (problem-based learning) meaningful learning will occur. Students who learn to solve a problem will apply the knowledge they have or try to find out the knowledge needed. Learning can become more meaningful and can be expanded when students are faced with situations where concepts are applied.
2. In a Problem Based Learning model situation, students integrate knowledge and skills simultaneously and apply them in relevant contexts.

The Problem Based Learning model (problem-based learning) can improve critical thinking skills, foster students' initiative in working, internal motivation to learn, and can develop interpersonal relationships in group work.

From the description above, there is a gap between curriculum expectations and the grades obtained by students. Therefore, researchers are trying to change the learning system, especially regarding the characteristics of arithmetic operations on whole numbers by using the Problem Based Learning model in the classroom. III UPTD SDN 37 Barru.

## 2. METHOD

This research is Classroom Action Research (PTK) which was carried out in two cycles with each cycle containing planning, implementation, observation and reflection. This research was conducted in class III UPTD SDN 37 Barru located in Lipukasi Village, Tanete Rilau District, Barru Regency, South Sulawesi, starting from August to October 2024 in the 2024/2025 academic year, totaling 12 students consisting of 4 male students and female students. The data collection techniques used in this research were test, observation and documentation techniques.

PTK research is carried out as an implementation plan in cycle 1 consisting of:

1. Planning (Planning)

This activity is carried out as an effort to find out learning outcomes, so it is necessary to observe and analyze problems in the class. After knowing the existing problem, it is necessary to have one action to find solutions to problems through learning with the structure of the Learning Implementation Plan (RPP) regarding understanding how living things adapt to their environment.

2. Acting (Action) and Observing (Observation)

This research plan is in the form of action research work procedures carried out in the classroom. Implementation of actions in cycle 1 is in accordance with previously planned planning. Observations are carried out during the implementation of the action and involve teachers collaborating with students to determine interests and results on the observation sheet that has been prepared. carried out by observation. After conducting observations and research, students will be evaluated on the implementation of the action. In cycle I, it was carried out in three meetings with the cultivation of learning concepts.

### 3. Reflecting

Reflection activities carried out after implementation in cycle 1 are looking at students' strengths and weaknesses when carrying out actions that have been taken to improve learning in the next cycle. The results of this reflection are used to determine students' interests and learning outcomes, so what will be achieved when preparing activity plans in cycle 2 is taking a learning approach that is used as action (Evandel et al., 2024).

## 3. RESULTS AND DISCUSSION

Based on the results of action observations, it can be stated that there has been an increase in the quality of learning, both the process and the results of numeracy skills using audio-visual media from cycle I to cycle II. In general, this research has succeeded in answering the problem formulation that has been put forward. The formulation of the problem is: Is there an increase in mathematics learning in addition and subtraction of whole numbers through audio-visual media for class III students at UPTD SDN 37 Barru.

### Cycle I Learning Activities

Implementation of actions in cycle I did not experience significant obstacles. Learning in cycle I was carried out over three meetings. Learning is carried out in several stages. The following are the stages of implementing the learning carried out.

First, the implementation of learning begins by dividing students into 3 groups with heterogeneous members consisting of 4 students in each group. After dividing into groups, the teacher explains the definition, types and parts of addition and subtraction. After giving an explanation, the teacher plays the video. Students listen carefully to the video. After watching the video, the teacher gives each group a LKPD to work on.

During the discussion process, the teacher observes as much as possible the students' performance in completing their assignments. As much as possible, all group members are asked to be involved. Students are also directed to exchange information from what they have previously read. Apart from that, students or groups who experience difficulties are directed by the teacher. After students have finished carrying out discussion activities, group representatives are asked to present the results of their discussion. After finishing presenting the results of the discussion, the teacher gives the other groups the opportunity to provide responses regarding the presentation of the results of the discussion given. This aims to ensure that students participate actively in discussion activities and practice student skills.

After completion, the teacher provides additions and feedback regarding the results of the discussions that have been carried out. The teacher draws conclusions about the implementation of the learning that has taken place. Before closing the lesson, the teacher first gave appreciation to all students for having studied well. This activity was carried out over two meetings. In this first cycle, students are given an evaluation at the third meeting regarding the learning that was given previously, namely to determine students' numeracy

skills.

### Cycle II Learning Activities

The implementation of actions in cycle II is not much different from the implementation of cycle I. Learning activities begin by reviewing the evaluation results of cycle I. The teacher discusses students' erroneous work, pointing out errors in questions that make students confused. After discussing the assignment, the teacher reviews the material related to addition and subtraction. Parts of addition and subtraction are repeated so that students understand more deeply the definition, characteristics and parts of addition and subtraction. Repetition is carried out by asking students questions and answers.

After reviewing the material, the teacher directs students to return to their seats according to the groups that were previously formed. The teacher plays a video related to addition and subtraction and students listen carefully to the video. The video is made more interesting so that students understand more about the video they are watching. After watching the video, the teacher distributes LKPD to each group and directs the students to complete the tasks given. Students discuss with their group friends to complete the tasks given. Teachers observe student performance and help students who have difficulty doing their assignments. After all groups have finished, the teacher directs each group representative in turn to present the results of their discussion in front of the class. Other groups are given the opportunity to respond to the results of the group discussions that appear.

After all groups presented the results of their discussions, the teacher provided additions and feedback regarding the assignments given and the teacher gave appreciation to each group so that students were enthusiastic about learning again. This activity was carried out over two meetings. At the third meeting, students were given an evaluation regarding addition and subtraction of whole numbers to determine the level of students' listening and numeracy skills. The increase in mathematics learning in addition and subtraction of whole numbers can be seen from the results of the cycle I and cycle II tests. The average student scores for each aspect in cycle I and cycle II are shown in the following table:

Comparison of Average Student Scores in Cycle I and Cycle I

No	No	Suklus I	Cycle 2
1.	Nur sulfayani sukma	90	95
2.	Diyan Reski Ramadhani	85	90
3.	Arsyila Octavia	75	80
4.	Nurfadillah	80	90
5.	Sakinah Nurkardiani	75	85
6.	Muhammad Ashar	85	85
7.	Muhammad Rizqi	80	85
8.	Maulana Yusuf	80	85
9.	Muhammad alfarizki. A	80	80
10	Aisyah Triputri	85	85
11.	Ainun ramadhani kana	75	80
12.	Anindia evauzia	90	95
	Rate-rate	81.66%	86.25%

These data show that the average student test score has increased from cycle I to cycle II. In Cycle I the average student score was 81.66% and in Cycle II the average student score was 86.25%. Based on this, it can be seen that there has been an increase in mathematics learning of addition and subtraction material for class III students at UPTS SDN 37 Barru.

The increase in students' abilities in learning mathematics in addition and subtraction material occurred after the implementation of audio-visual media. By using audio-visual media, students show more interest in learning when compared to just implementing conventional learning. The use of audio-visual media aims to clarify the presentation of messages and information conveyed while simultaneously facilitating and increasing activities, processes and the value of learning outcomes (Damayanti, 2021:14) . The use of audio-visual media can be adjusted to the learning material that the teacher will convey to students. Audio visual media can be used by teachers to attract students' attention, so that the material can be conveyed and received well. Audio visual media as teaching materials are available in various disciplines, so they can easily be used as support or tools in the learning process.

The use of audio-visual media is useful for helping students understand the context of the problem, when compared to problems that are only presented in text form. According to Ilham et al (2023: 23), the use of audio-visual media has several advantages, including:

1. Can provide learning experiences that cannot be learned directly, for example when students study life on the seabed, they can learn through films because it is impossible to ask students to dive;
2. Allows variation in learning so that motivation and enthusiasm for learning increases; as well as
3. Functions as a learning tool that allows students to learn independently without relying completely on the presence of the teacher.

Apart from improving numeracy skills, the use of audio-visual media in Mathematics learning is also used for several different purposes. For example, research by Edy Suprianto (2019) shows that the use of audio-visual media can improve mathematics learning regarding addition and subtraction of whole numbers up to 100. In addition, research by Setiawardani (2013) shows that audio visual media is also useful in helping students improve their abilities. speak. Research with the aim of improving students' abilities in these 7 languages is important to continue to be developed. Whatever subjects' students are interested in in the future, even whatever life will be like in the future, language skills are very important.

#### 4. CONCLUSION

Based on the research results, it can be concluded that learning using the problem-based learning (PBL) learning model can improve student learning outcomes in mathematics on the topic of whole numbers in class III UPTD SDN 37 Barru. The results of the research showed that there was an increase in learning outcomes from pre-cycle to cycle I, an increase of 81.66%, while in cycle II, namely 86.25%, there was an increase in student learning completeness.

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