

Application Of The Abacus Media To Improve Mathematics Learning Outcomes Of Class II Students Of SD Negeri 0703 Hutaraja Tinggi

Risya Yanti Hasibuan

STKIP Rokania

Email: risyayantihisibuan@gmail.com

Abstract, The main question of this research is whether the learning media of the abacus can improve the mathematics learning achievement of the second grade students of SD Negeri 0703 Hutaraja Tinggi in the matter of counting. This study aims to improve the mathematics learning outcomes of grade 2 students of SD Negeri 0703 Hutaraja Tinggi in arithmetic operations. This type of research is Classroom Action Research, which consists of two cycles, which are carried out four times each. The research tools needed for this classroom action research are Learning Implementation Plans (RPP) and Assessment Forms. Data collection techniques used are tests and observations. This research includes quantitative and qualitative research. The research process includes planning, implementing actions, observing, and reflecting. The subjects of this study were the second grade students of SD Negeri 0703 Hutaraja Tinggi as many as 26 students. The results showed that in the first cycle, which was completed by 26 students, only 14 students or 54% met the Minimum Integrity Standards (KKM) or were in the very low category. And in cycle II, out of 26 students, 23 students or 88% completed the KKM. Based on the findings above, it can be concluded that the second grade students of SD Negeri 0703 Hutaraja Tinggi experienced an increase in their mathematics learning outcomes through the use of the abacus media.

Keywords : Mathematics Learning Outcomes, Abacus Media, Counting Operations

This is an open access article under the [CC BY-SA](#) license



I. INTRODUCTION

One student's academic achievement looks different from the others because it is influenced by various factors. These factors include internal and external factors. Internal factors are factors from teachers and students, including intelligence/ability, interest, and motivation factors. External factors are external factors, namely educational environmental factors,

including family environmental factors, school environmental factors and community environmental factors (Kristianto, 2012).

One of the most important basic subjects that students must master from elementary to the highest level is mathematics. Mathematics plays an important role in our daily life Human activities in any field. Mathematics is also a tool for logical, analytical, creative and

systematic thinking. However, as we already know that today, student achievement in mathematics starts at the elementary level. Still at a low to moderate level, that's what is expected. Teachers can choose a good learning model so that learning can run well and study well. Teachers must be able to plan classes Fun, Effective and meaningful math.

Mathematics always emphasizes lessons that are more focused on numbers, often teachers only explain formulas and give examples, by lecture only and in a monotonous way. Many of the students still find it difficult to accept explanations from the teacher, causing students' misunderstanding of the material being taught and causing student learning outcomes to decline. As stated by Ruseffendi, mathematics for elementary school age children in general, is a subject that is not liked. This causes students' interest in learning to decrease, and is not good.

Meanwhile, according to (Susanto, 2013), learning mathematics is a sufficient condition to continue education to the next level. Because by studying mathematics, we will learn to reason critically, creatively, and positively. Mathematics is an abstract concept that contains symbols, so it is necessary to understand mathematical concepts before manipulating symbols.

Mathematics learning must begin with the introduction of questions that are appropriate to the teaching situation, while providing opportunities for students to play an active role in the learning process. Learning should be interactive, inspiring, fun, and motivating students to engage with sufficient space for their creativity and independence, based on their talents and interests. This will achieve the desired effect. In modern times like today, there are lots of media or tools that can help students learn. One of them is the abacus. This abacus media contains many benefits when used by students, namely (1) the abacus optimizes the work functions of the right and left brain, because in addition to focusing children on counting, children use imagination and logic (2)) train imagination and creativity, logic, systematic thinking , concentration (3) increases the speed, accuracy and precision of thinking (4) they become more sensitive to spatial arrangements due to the influence of the abacus on our brain (5) Children will remember what they are looking for through the abacus (Irma, 2013).

Based on the results of initial observations at SD Negeri 0703 Hutaraja Tinggi Class II, it can be seen that the students' arithmetical operation ability is still low, and it is difficult to input numbers above ten. This is due to the lack of

attractiveness of the media used by teachers in the learning process. The teacher only teaches students to count with fingers and traditional learning media (gravel). This resulted in the concept of counting is not well absorbed by students.

In summary, it can be said that the use of media will foster students' enthusiasm to participate in the learning process. Learning will be more meaningful if learning uses learning aids, namely media. The media used to overcome the above problems is the abacus learning media. By using these media students will find it easier to know where to count and by using this media will also make students not bored during the learning process.

Purwanto (Purwanto, 2013) reaffirmed that learning outcomes are changes in student behavior resulting from learning. The change in behavior is due to his mastery of many of the materials given in the teaching process. Achievement is based on defined teaching goals. The results can manifest as cognitive, affective, and psychomotor changes. There are several factors that influence learning outcomes: 1) Internal factors Internal factors are factors from within students, which affect their learning abilities. The intrinsic factors include intelligence, interest and attention, motivation, perseverance, attitude, study habits, as well as physical and health status.

2) External Factors External factors come from outside students that can affect learning outcomes, namely family, school and community. Family circumstances can affect student learning outcomes. Poor family finances, husband and wife quarrels, lack of parental attention to children, and bad parental behavior in daily life can all affect student learning outcomes (Miptahul, 2017).

Understand that learning is a behavioral process. Through learning, a person experiences changes in behavior in terms of knowledge, attitudes, skills, and skills. From the notion of learning, namely changes in behavior which can also be said as a result of learning, there is a process of behavior from not knowing to knowing, from bad attitude to good, and from unskilled to skilled. Learning outcomes are students' abilities as a result of their learning experiences.

According to historical records, the abacus is a calculating tool that has been used by the Chinese and Japanese since 2400 BC. Simple abacuses are made of natural materials such as wood and bamboo, as well as synthetic or plastic materials. According to Ed. An abacus can be thought of as a counting device consisting of beads, which are divided into upper and lower beads. The abacus is called Soroban and abacus. The shape of the abacus is a

rectangular box, divided into top and bottom, with five beads at the top and one bead at the bottom. Each abacus series in extreme units has a unit value, then to the left is ten, hundred, thousand, and so on. The abacus makes addition, multiplication, division and subtraction easier. All children can use the abacus, especially to practice basic arithmetic operations of addition and subtraction. The abacus or soroban used is a pure decimal system consisting of two rows of beads. The top row consists of one row of beads and the bottom row consists of four rows of beads.

The number of beads consisting of one row at the top has an identification value of five, while the number of beads at the bottom consisting of four rows of beads is four. In the case of blank or zero, the beads do not stick to the value line or the dividing line between the top and bottom beads. The value line is the delimiter between the top and bottom beads, how to read it by adding up the value of the beads. The abacus in the far right position or the unit value of the abacus containing the beads, then the row to the left is worth tens, hundreds, thousands, and so on.

In choosing learning media, there are criteria for selecting good and appropriate media. It aims to create a good classroom atmosphere and make students interested in participating in learning. In Dina's view, a

good learning media must meet several requirements, namely: it must be realistic, simple, relatively sized, and contains movements and actions. Learning the abacus in learning mathematics will improve numeracy skills and have both long-term and short-term goals.

II. RESEARCH METHODS

This type of research uses classroom action research (CAR) because the researcher acts directly in the research, from the beginning to the end of the action. The process of implementing this classroom action research begins with planning, implementing actions, observing, evaluating, and reflecting which can be repeated in one cycle. This research was conducted at SD Negeri 0703 Hutaraja Tinggi. The study lasted for 1 month. The subjects of this class action research were 26 second grade students consisting of 12 male students and 14 female students. The research program carried out is a plan / plan, researchers carefully plan learning using the abacus media in the Learning Implementation Plan (RPP) which is compiled in the program b. Researchers carry out the learning process in accordance with the lesson plan and carry out the learning plan. Observing actions and student activities c. Researchers observe doing tests and analyze learning outcomes

d. Reflects where researchers process observations about the implementation of lesson plans and student activities.

Data collection is done by: Test According to (Suharsimi Arikunto, 2010), a test is a series of questions or exercises and other tools used to measure skills, intellectual knowledge, abilities or talents possessed by individuals or groups. Meanwhile, according to (Kunandar, 2011), the test is a number of questions posed to a person or several people to reveal the state or level of development of one or several psychological aspects in the body. This test is one of the most common data collection techniques used in classroom action research. This is because in general classroom action research is one that is measured is student learning outcomes. In measuring student learning outcomes, one of them is the use of test instruments. In this case, the researcher designed an assessment form for students as a tool that can be used to obtain quantitative data in the form of the value of the results of the abacus media application to improve learning outcomes, which were then analyzed and concluded. b. According to Hardy's observations, observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the process of observation and memory. Observation is a systematic and

conscious data collection technique by observing and recording what is being investigated. In this case, the researcher observed that the second grade students of SD Negeri 0703 Hutaraja Tinggi experienced the development of learning outcomes.

Data analysis is a method of analyzing data obtained by researchers during their research. This research includes quantitative and qualitative research. The data obtained quantitatively were then analyzed by descriptive analysis of percentages. Qualitative data describes student activities obtained from observation sheets. The rate of change that occurs is measured as a percentage. Multiply the total number of children studied by one hundred percent to find the percentage of successful practice.

III. RESEARCH RESULTS AND DISCUSSION

Based on the indicators applied, indicators of the success of this classroom action learning, to determine the extent to which student learning outcomes are calculated through a test at the end of the cycle using the abacus media. Students have reached KKM 70 in Mathematics. Based on the results of data analysis conducted in cycles I and II, it showed that the second grade students of SD Negeri 0703 Hutaraja Tinggi achieved an increase in numeracy

through the use of the abacus media in their mathematics learning achievement. In the first cycle the researcher asked students to use their fingers to learn arithmetic operations, but there were still students who were less able to solve practice questions using only their fingers. This is because students have difficulty when arithmetic operations fall into tens. After reflecting on the first cycle, the researcher made several improvements, one of which was by attracting students' interest and preparing media for the second cycle.

In cycle II, it was seen that there was an increase in students' mathematics learning outcomes in arithmetic operations. Students are also more interested in participating in learning with the media used in the learning process. This can be seen from the results of data analysis which shows that there are many students who are able to complete arithmetic operations using the abacus media.

Based on the results of the implementation of the actions in cycles I and II, it can be stated that there was an increase in students' mathematics learning outcomes in arithmetic operations. This can be seen from the following table:

Table 1: Percentage of Mathematics learning achievement of Grade 2 students of SD Negeri 0703 Hutaraja Tinggi in cycles I and II

Cycle	Percentage of completeness	Categories
I	54%	Low
II	88%	High

As shown in Table 1 above, the score of students' mathematics learning outcomes in the first cycle is 60% which is included in the low category, while the second cycle students' mathematics learning outcomes is 80% and belongs to the low category. high category. From this it can be concluded that the use of the abacus as a learning medium can improve students' mathematics learning outcomes in arithmetic operations.

IV. CONCLUSION

Through the use of learning media the abacus can improve mathematics learning outcomes for Grade 2 students at SD Negeri 0703 Hutaraja Tinggi, this can be seen from the following conclusions:

1. There is an increase in students' mathematics learning outcomes in operations count using the abacus media used as a medium in learning.
2. Completeness of mathematics learning outcomes of grade 2 students of SD Negeri 0703 Hutaraja Tinggi has increased where in the first cycle from 54% to 88% in the second cycle.

BIBLIOGRAPHY

- Irma, N. (2013). *Pengaruh Media Sempoa Terhadap Kreativitas Siswa dan Hasil Belajar Matematika Siswa Kelas II SDN II KarangRejo Tulungagung Tahun Ajaran 2012/2013*.
- Kristianto, A. (2012). *Hubungan Lingkungan Pendidikan Dengan Prestasi Belajar Siswa Kelas II Jurusan Teknik Mekanik Otomotif SMK Se-Kabupaten Sleman*.
- Kunandar. (2011). *Langkah Mudah Penelitian Tindakan Kelas Sebagai Pengembangan Profesi Guru*. Rajawali Pres.
- Miptahul, H. (2017). *Meningkatkan Hasil Belajar Matematika Melalui Penerapan Model Pembelajaran Kooperatif Tipe Kepala Bernomor Dengan Menggunakan Media Misyu Catung Siswa Kelas IV SDN 5 Dasan Lekong Tahun Pelajaran 2016/2017*.
- Purwanto. (2013). *Evaluasi hasil belajar*. Pustaka Pelajar.
- Suharsimi Arikunto. (2010). *Prosedur Penelitian*. Rineka Cipta.
- Susanto, A. (2013). *Teori Belajar dan Pembelajaran di Sekolah Dasar*. PT Kharisma Putra Utama.