Efforts to Improve Learning Outcomes of Adding and Subtracting Integer Using Garbilpau Media

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Abstract
The background to this research is that students' ability to understand the concept of adding and subtracting integers is still low. This research aims to determine the use of garbilpau media on the ability to add and subtract integer concepts at SDN 2 Sudamanik. This research technique uses Classroom Action Research (PTK). The sources of this research are the principal, teachers and class III students at SDN 2 Sudamanik. The results of the research show that the ability to understand the concept of adding and subtracting integers at SDN 2 Sudamanik is still low. By utilizing garbilpau media, it is hoped that there will be improvements in students' ability to add and subtract whole numbers. Every lesson uses garbilpau media, and through this garbilpau media students can improve their understanding of the concept of adding and subtracting integers at SDN 2 Sudamanik.

Keywords: Addition, Subtraction, Integers, Garbilpau Media.
mathematics, therefore we often hear complaints from students that mathematics is a difficult lesson for them, difficult to understand and is very feared and even hated so that it has an impact on their low level of learning. student learning outcomes (Marpudin dkk, 2014).

The lack of mastery of mathematics material for students is partly because students are used to memorizing a formula without knowing how the formation of the formula takes place. This causes students to often forget what they have learned and students are less able to understand or draw conclusions from the information the teacher has provided. Students are also never given direct experience or concrete examples, giving a boring impression. Apart from that, there are teachers who are less successful in conveying concepts or material due to a lack of mastery of learning methods. The low level of mastery of understanding mathematical concepts is indicated by students' low mathematics achievement scores.

The use of media has a significant effect on the understanding of adding whole numbers in mathematics for elementary school students at 2 Sudamanik. However, it is necessary to realize that learning planning sometimes strays far from the implementation process in the classroom and can change at any time (dynamically).

Arsyad in (Nasser, 2021) suggests that the word media comes from the Latin medius which literally means middle, intermediary or introduction. In Arabic, media is an intermediary or messenger of messages from the sender to the recipient of the message. Rusman in (Sulaeman, 2022) stated that the media is a messenger from the sender to the recipient of the message, thus the media is a vehicle for transmitting learning information or transmitting messages. Based on the National Education Association/NEA in (Apiyani, 2022) it is stated that it has different meanings. Media are forms of communication, both printed and audio visual, and their equipment. Media should be able to be manipulated, seen, heard and read. Meanwhile, according to the Association of Education and Communication Technology (AECT) in (Supriani, 2023) that media is all forms and channels used to channel messages or information.

Based on the opinion above, it can be concluded that media is a tool used to support learning so that learning can run well. Media can also be interpreted as a link between givers and recipients of information. The use of media as a link between educators and students is what is called learning. In other words, active learning requires media support to deliver the material they will learn.

Warsita in (Arifudin, 2022) stated that learning is a translation of the word "instruction" which in Greek is called instructus or "intruere" which means conveying thoughts, thus the meaning of instructional is conveying thoughts or ideas that have been processed meaningfully through learning. Lamatenggo in (Mayasari, 2022) explains that the word learning contains a more proactive meaning in carrying out learning activities, because in it not only educators or instructors are active, but students are active subjects in learning.

Munir in (Arifudin, 2021) explains that learning is not just conveying information or knowledge, but conditioning students to learn, because the main goal of learning is the students themselves. So learning is the process of interaction between educators and students as well as the learning resources and media used, in an effort to bring about changes in cognitive, affective and motoric aspects. Therefore, so that learning activities are meaningful for students, educators need to develop learning media that are varied and interesting for students.

Lamatenggo in (VF Musyadad, 2022) explains that learning media are all forms of communication tools that can be used to convey information from sources to students in a planned manner so as to create a conducive learning environment where
recipients can carry out the learning process efficiently and effectively. Meanwhile, Rusman in (Hadiansah, 2021) stated that learning media is a message carrier technology that can be used for learning purposes, learning media is a physical means for conveying lesson material. Learning media is a means of communication in the form of print or viewing and hearing, including hardware technology.

Masykur et al in (Sinurat, 2022) explain that learning media is used as a learning tool in schools with the aim of improving the quality of education. Media is a tool that can be used as a useful intermediary to increase effectiveness and efficiency in achieving goals. Meanwhile, Arsyad in (Hasbi, 2021) concluded that learning media is anything that can be used to convey messages or information in the teaching and learning process so that it can stimulate students’ attention and interest in learning. Based on the opinion above, it can be concluded that learning media is a tool that contains learning material used by educators in the learning process so that learning will attract more attention from students.

For this reason, it is necessary to conduct a study that focuses on a series of learning activities related to how the number line can help students understand the operations of adding and subtracting integers.

Hamalik in (MF AK, 2021) stated that the use of learning media in the learning process can generate new desires and interests, generate motivation and stimulation of learning activities, and even have psychological influences on students. Meanwhile, Levie and Lentz in (Tanjung, 2022) stated four functions of learning media, especially visual media, namely: a) The attention function of visual media is the core, namely attracting and directing students’ attention to concentrate on lessons related to the meaning displayed or accompanying text subject matter, b) The affective function of visual media can be seen from students’ enjoyment when learning (or reading) text with images, c) The cognitive function of visual media can be seen from research findings which reveal that visual symbols or images facilitate the achievement of the goal of understanding and remembering or the message contained in the image, and d) The compensatory function of learning media can be seen from the research results that visual media which provides context for understanding the text helps students who are weak in reading to organize information in the text and recall it. Based on the opinion above, it can be concluded that the function of learning media can help facilitate learning for students and educators, provide more real experiences (abstract becomes concrete), attract students' attention and interest in learning, and can generate similarities between theory and reality.

Based on observations, teachers predominantly use the lecture method and use less media, especially in learning mathematics, so students will quickly feel bored and lazy in participating in learning. It is not uncommon for students to admit that they have difficulty understanding mathematics subject matter, so their learning outcomes are also low. Around 30% of children understand the operations of adding and subtracting integers using a number line and the remaining 70% of children still do not understand/master these number operations. To overcome this problem, the researcher will try to use learning media in the form of an interesting Whale Number Line, so that students will be more curious about what the researcher has brought and children will be directly involved in the learning. The researchers called the media Garbilpau, because the media is in the form of a number line made from used goods (cardboard) and a whale that the researchers made themselves from flannel.

To provide an understanding of learning outcomes, they will be explained first in terms of language. This definition consists of two words 'results' and
'learning'. In the KBBI as quoted (Fitria, 2023) results have several meanings: 1) Something provided by the business, 2) income; acquisition; fruit. Meanwhile, learning is a change in behavior or response caused by experience.

In general, Abdurrahman was quoted as saying (Rahman, 2021) explaining that learning outcomes are the abilities that children gain after going through learning activities. According to him, children who are successful in learning are successful in achieving learning goals or instructional objectives. What is meant by learning according to Usman quoted (Ulfah, 2019) is a change in behavior in an individual thanks to interactions between one individual and another individual and between the individual and the environment.

More broadly, Subrata in (Arifudin, 2020) defines learning as "(1) leading to change, (2) That change is essentially the acquisition of new skills, and (3) That change occurs due to deliberate effort". From the definitions above, it can be seen that experts use the term "change" which means that after someone learns, they will experience changes. To further clarify, Mardianto in (Nurbaeti, 2022) provides conclusions regarding the meaning of learning: 1) Learning is an effort, which means actions carried out seriously, systematically, by utilizing all the potential one has, both physical and mental, 2) Learning aims to bring about changes within oneself, including changes in behavior which are expected to be positive and in the future, 3) Learning also aims to make changes in attitudes, from negative to positive attitudes, from disrespect to respect and so on, 4) Learning also aims to make changing habits from bad habits to good habits. The bad habits that are changed are to become a provision for a person's life so that he can differentiate between what is considered good in society and which must be avoided and which must be maintained. 5) Learning aims to change knowledge about various fields of science, for example from not knowing how to read to knowing how to read, you can't write so you can't write. Not being able to count becomes knowing how to count and so on, 6) Learning can bring about changes in skills, for example skills in sports, arts, engineering and so on.

Purwanto, as quoted by (Hoerudin, 2023), stated that learning outcomes are abilities that individuals obtain after the learning process takes place, which can provide changes in students' knowledge, understanding, attitudes and skills so that they become better than before. As for Tri Anni, as quoted (Ulfah, 2021), learning outcomes are an indicator of the learning process. Learning outcomes are changes in behavior that students obtain after experiencing learning activities. One indicator of whether a learning process has been achieved or not is by looking at the learning outcomes achieved by students.

Learning outcomes are the level of mastery achieved by students in participating in teaching and learning programs, in accordance with the stated objectives (Mawati, 2023). According to Dimyati and Mudjiono as quoted (Mayasari, 2021) it can be understood that what is meant by learning outcomes is a process to see the extent to which students can master learning after participating in teaching and learning process activities, or the success achieved by a student after participating in learning activities that are marked in the form of certain numbers, letters or symbols agreed upon by the education provider. From the several theories above regarding the meaning of learning outcomes, the learning outcomes referred to in this research are learning outcomes (changes in behavior: cognitive, affective and psychomotor) after completing the learning process using information search learning strategies and recitation methods as proven by evaluation results, in the form of value.

Factors that influence learning outcomes include students' physical and spiritual factors, this is related to students' health problems, both their general physical
condition, while environmental factors are also very influential. 70% of student learning outcomes in madrasas are influenced by student abilities and 30% are influenced by the environment (Syah, 2007). According to Chalijah Hasan, quoted in (Ulfah, 2020), the factors that influence learning activities include: 1) Factors that occur within the organism itself, called individual factors, are maturity/growth factors, intelligence, training, motivation and personal factors, and 2) Factors that exist outside the individual which we call social factors, family factors/household conditions, teachers and their teaching methods, tools used or teaching media used in the learning process, the environment and opportunities available and social motivation.

This research is very important to carry out, so it needs to be carried out comprehensively to produce data related to efforts to improve learning outcomes for adding and subtracting integers using Garbilpau media.

Methodology

According to (Rahayu, 2020) research methods are an effort to search for and collect research data or information used by researchers. This research uses a classroom action research method consisting of II cycles. Classroom Action Research is the process of studying learning problems in the classroom through self-reflection and efforts to solve them by carrying out various planned actions in real situations and analyzing each influence of these actions (Haris, 2023).

This type of research is classroom action research (PTK). According to Kurt Lewin in (Arifudin, 2023), classroom action research (PTK) says that classroom action research is a series of steps consisting of four stages, namely planning, action, observation and reflection.

In this research, content validity is used, according to (Hanafiah, 2021) that content validity is the validity of an instrument related to the ability of an instrument to measure the content (concept) that will be measured in the research. Here the researcher has found indicators and sub-indicators based on the variables to be studied.

It can be defined as research carried out by teachers in their own classrooms through self-reflection, with the aim of improving their performance as teachers, so that student learning outcomes improve (Mayasari, 2023). In this classroom action research model, the researcher (teacher) acts as an observer (observation) as well as a participant.

This research aims to improve children's learning outcomes in learning mathematics, regarding addition and subtraction of integers using the whale number line as media. Researchers hope that by using Garbilpau media, students will be more enthusiastic about learning and understand what the researchers and teachers are teaching.

Data collection was carried out on class III students at SDN 2 Sudamanik using test sheets and observation sheets. The target of the observation is observation of learning management to observe students' readiness in learning. Observation serves to document the influences related to the process. Which is then tested as an indicator of student success. A test is a series of questions or exercises used to measure the skills, knowledge, intelligence, abilities or talents of an individual or group. This test was carried out with the aim of measuring students in terms of cognitive aspects by giving a final learning test.

The data collection techniques used were observation, tests, questionnaires and documentation. The observation data collection technique according to Marshall in (Mardizal, 2023) states that through observation, researchers learn about behavior and the meaning of that behavior. Tests according to Brown in (Fitria, 2020) state that tests are a method of measuring skills, knowledge or attitudes. According to this opinion, tests are used to evaluate
learning in three domains, namely psychomotor, cognitive and affective. According to Sugiyono, a questionnaire or questionnaire quoted in (Supriani, 2020) states that it is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer. A questionnaire or questionnaire is an efficient data collection technique if the researcher knows exactly what the respondent expects. And finally, documentation, according to Sugiyono quoted in (Ulfah, 2023), documentation is a record of important events that have passed. Documents can be in the form of writing, images, or monumental works by someone. Documents in written form, for example diaries, life histories, stories, biographies, regulations, policies. Documents in the form of images, for example photos, live drawings, sketches and others. Documents in the form of works, for example works of art, which can be in the form of pictures, sculptures, films, etc.

Technique used for data analysis in this research is analytical descriptive techniques. Ratna in (Hanafiah, 2022) emphasized that analytical descriptive research is carried out by describing facts which are then followed by analysis. Descriptive techniques are divided into two, namely quantitative data and qualitative data. According to Ronny Kountur in (Ulfah, 2022) that descriptive research has the following characteristics related to the situation that occurred at that time, describes only one variable or several variables but is described one by one, the variables studied are not manipulated or there is no treatment (treatment). Therefore, descriptive research has the following characteristics related to the situation that occurred at that time, describes only one variable or several variables but is described one by one, the variables studied are not manipulated or there is no treatment (treatment). According to Dahlan in (Fikriyah, 2022) that the collected data is then tested and researched for its authenticity and validity through external and internal criticism as a logical consequence of this research, so that the data obtained truly describes the problem being researched and is avoided. errors in the research process.

Findings and Discussions

The first stage that the researcher carried out in preparation for this classroom action research was determining the location that would be used as the research site. The implementation of classroom action research that the researcher chose was SDN 2 Sudamanik, which is located at Kp. Olor, Sudamanik Village, District. Cimarga, Kab. Lebak. The reason the researchers chose SDN 2 Sudamanik was because mathematics learning outcomes were still low and they wanted to help create innovations in the form of concrete objects, in the form of Garbilpau which the researchers made so that students could understand mathematics learning more quickly.

Pre Cycle

The pre-cycle in the form of an initial assessment is carried out to determine the extent of students' abilities in learning mathematics on the subject of adding and subtracting on the whole number line. The researcher prepared material for the initial assessment, as well as assessing mathematical abilities using 10 questions. The following is the data from the initial assessment of Mathematics abilities.

Based on research, it can be identified that Mathematics abilities on the subject of adding and subtracting integers are still lacking, the lack of understanding in mathematics learning is due to: 1) Learning is still centered on the teacher, 2) The method used is only lectures so children easily feel bored and bored, and 3) Lack of
use of concrete media that can make children interact more with each other.

Based on the results of observations and initial assessments that have been carried out, it can be concluded that Mathematics learning on the subject of adding and subtracting integers as many as in class III students at SD Negeri 2 Sudamanik is in the low category. The low level in this subject was identified from the average score that the researcher carried out in the initial assessment for this ability. Of the 14 students in class III of SD Negeri 2 Sudamanik who were observed, the highest score was achieved by Lifa, Melia, and Holipah with a score that exceeded KKM score while the lowest scores were achieved by Agis and Fajri.

**Cycle I**

Assessment Cycle I of learning Mathematics for adding and subtracting integers using Garbilpau media to increase student scores, seen from the average student results reaching 930 with a percentage of 66.42%. The first cycle experienced an increase of 7.42% from the number of 14 students who succeeded in achieving KKM/completed as many as 7 students, and the highest score was achieved by Lifa and Melia with a score of 90. However, the increase that occurred in the first cycle has not yet experienced significant indicators of achievement, determined, so that actions need to be taken that must be planned in the next cycle.

**Cycle II**

Based on the assessment of cycle II of mathematics learning for adding and subtracting integers using the garbilpau media to improve learning outcomes, as seen from the average score of students in cycle I was 67.85% and only 10 students succeeded in achieving KKM with a percentage of 71.43%. Meanwhile, in cycle II the average score increased to 80% with 14 students achieving KKM with a percentage of 100%. In cycle II, the KKM (70) has been reached, it can be concluded that the results of learning mathematics for adding and subtracting integers using garbilpau media in cycle II have increased and are in accordance with the established indicators of success.

**Conclusion**

Based on the data description and research analysis regarding the use of Garbilpau media regarding addition and subtraction of integers to improve learning outcomes for class III students at SD Negeri 2 Sudamanik for the 2020/2021 academic year, conclusions can be drawn: 1) Implementation of mathematics learning using whale number line media in the material Adding and subtracting integers can improve class III learning at SDN 2 Sudamanik. Student activity has also increased quite well and students are more enthusiastic in the learning process using garbilpau media. It can be seen from each meeting that students are more active and want to answer sample questions given by the teacher using garbilpau. How to use garbilpau media is very easy, students just with a score of 100. It can be concluded that this second cycle can experience improvement and achievement established indicators of success.
need to move the whale doll to the desired point, for example (5 + \(\text{\textbf{3}}\) =), the whale doll is first at the zero point (0) facing the right, if the number points in the positive direction then the whale doll will go forward and if it goes in a negative direction then the whale doll will go backwards. After that, the whale doll advances 5 steps and then advances again 3 steps, the result will be 8.

2) After the learning process using the garbilpau it can also improve student learning outcomes, one of which is an increase in the KKM which must reach 70. In the pre-cycle it is as much as Of the 14 students, only 4 got a pass mark of 28.57%. In the first cycle there was an increase of 10 students with a percentage reaching 50%. In cycle II there was an increase of 14 students out of the total number of students with a percentage reaching 100% from the initial 50%. The reason is that after an evaluation was carried out, it turned out that students quickly got bored with the media used by teachers which was still monotonous and less innovative. In cycle II, the student achievement indicators determined by KKM 70 have met the target. The researcher concluded that by learning to use the whale number line (garbilpau) media in learning mathematics about adding and subtracting integers, it could improve the learning outcomes of class III at SD Negeri 2 Sudamanik and the researcher decided and ended not to hold the next cycle.

References


Profil Penulis


Hadi Sutiawan. Penulis merupakan seorang Dosen di Universitas Setia Budhi Rangkasbitung.
