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EFFECT OF USE MISTAR VALUE MEDIA ON ADDITION AND REDUCTION LEARNING RESULTS ROUND NUMBERS

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ABSTRACT
This study aims to determine the effect of using number ruler media on learning outcomes for addition and subtraction of integers in elementary schools. The design used in this study was the One Group Pretest-Posttest Design. With a population of all students in grade IV elementary school, amounting to 28 students, and the sample used is saturated sampling because all members of the population of 28 students were used as samples. The results obtained are the average value before using the media number ruler is 53.19, after using the media number ruler is 78.38. After testing the hypothesis tcount = 10.168 and ttable = 2.051 with a significant level $\alpha = 0.05$ and db = n - 1 = 28 - 1. tcount> ttable then the Ho hypothesis is rejected and Ha is accepted. Thus it is concluded that there is an effect of the use of number ruler media on learning outcomes for addition and subtraction of integers in grade IV SDN 31 Kota Selatan.

Keywords: Ruler, Study Result, Addition, Subtract Integer

INTRODUCTION
Mathematics plays an important role in the development of Science and Technology, besides mathematics is very necessary to solve problems in everyday life. In connection with the important role of mathematics, students need a good understanding of mathematics, especially students in elementary schools because elementary schools are the most basic schools, students who do not master mathematics in elementary school will definitely have difficulty learning mathematics at the next level. By paying attention to mathematics as a branch of science that has an abstract object of study, this is a serious challenge for mathematics teaching teachers in elementary schools to improve the learning process, especially the material for addition and subtraction of integers. The material for addition and subtraction of integers is a subject that is difficult for elementary school students to understand. Addition and subtraction of integers is material that requires a solid understanding of the concept so that teachers need to use a good strategy to instill the concept of addition and subtraction of integers.

Addition and subtraction of these integers can be solved easily if educators have creative ideas poured out through the use of instructional media. By using learning media in teaching it is expected to make it easier for students to accept and understand the material presented. One of the learning media that can be used to make it easier for students to understand the concept of addition and subtraction of integers is the media of number ruler. The media of number ruler has an important role as a concrete intermediary in understanding the concept of addition and subtraction of integers. According to Mustaqim, ddk (2008: 137), states that integers are numbers consisting of zeros, natural numbers, and opposite natural numbers. The following is an example of the opposite of natural numbers, namely: the number 6 is against -6 or negative 6 and the opposite number -10 or negative 10 is 10 or positive, so each member of the negative number is the opposite of the natural number.

According to Afidah, et al (2014: 86) explained that the concept of integers arises as a result of subtraction operations on whole numbers. So that the subtraction operation always results in a negative number. This number is the opposite (inverse to the addition) of each corresponding natural number. For example: -1 inverse with 1, -2 inverse with 2, and so on. The combination of the set of numbers with whole numbers forms the set of integers. Z = {…, -2 -1, 0, 1, 2,}.

According to Negoro, et al (2010: 36) that "integers consist of: 1) natural numbers or positive integers, 2) zero numbers, and 3) opposite natural numbers or negative integers. The set of integers is usually denoted by the

letter B ". So an integer is a number consisting of 0 or zero numbers, natural numbers or positive integers and negative numbers.

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Addition of integers

According to Adilman (2010: 31-35) suggests that there are several integer concepts, namely:

1. All positive integers added together produce positive integers.

Rumus : positif + positif = positif

Example :

a. 5 + 7 = 12
b. 3 + 4 = 7

2. All negative integers, when added up with other negative integers, will produce negative integers.

Rumus : negatif + negatif = negatif

Example:

a. -4 + (-6) = -10
b. -5 + (-3) = -8

3. There are three possibilities if an integer is positive when added to a negative integer, that is the probability that is meant is:

a. Returns a positive number if the positive number is greater.

Example:

1) 8 + (-3) = 5
2) (-3) + 5 = 2

b. Returns a negative integer, if the negative number is larger.

1) (-7) + 5 = -2
2) 3 + (-8) = -5

Subtract integers

According to Mustaqim, ddk (2008: 150) explains that integers to the left of the zero point are opposite each other to the numbers to the right of the zero point which are equidistant. Subtracting integers is the addition of their opposite numbers (a - b = a + (-b)) and (a - (-b) = a + b).

According to Adilman (2010: 33-32) there are several integer concepts, namely:

1. There are three possibilities if a negative integer minus a positive integer. The three possibilities are:

a. Returns a positive integer if the subtracted number is greater than the subtraction number.

Example:

1) 7 - 3 = 4
2) 8 - 5 = 3

b. Returns the integer 0 (zero) when the number subtracted is the same as the subtraction number

Example:

1) 8 - 8 = 0
2) 5 - 5 = 0

c. Returns a negative integer, if the subtracted number is smaller than the subtraction number.

Contoh :

1) 7 – 9 = -2
2) 6 – 7 = -1

2. Semua bilangan bulat jika dikurangi dengan 0 (nol), akan menghasilkan bilangan bulat itu sendiri.

Rumus : a + 0 = a

For all integers represented by a.
Example:
1) 8 - 0 = 0
2) (-5) - 0 = 0
3. Negative integers minus negative integers will result in negative integers.
Example:
1) -10 - (-3) = -7
2) 7 - (-3) = 10 together with 7 + 3 = 10
3) 8 - (-5) = 13 together with 8 + 5 = 13
The Nature of the Ruler of Numbers
Definition of Number Ruler
According to Sundayana (2016: 70) Counting ruler or number rule is a tool for calculating the addition and subtraction of whole numbers which can be made from cardboard yourself. The slide rule to be used consists of two rulers with the same scale and consists of integers, namely negative integers, zero, and positive integers. This media is very suitable for use in learning to count integers, this media is able to attract the attention of students.

Weaknesses and Strengths of Ruler of Number Media
a. Advantages
1. Make students motivated as a result encouraging them to do activities, both in the context of creative thinking and in the context of doing something
2. Students who learn will feel happy if they understand what is learned in a pleasant atmosphere, this can be seen during learning using the media of number ruler
3. Make it easier for students to understand addition and subtraction material, because this media is very suitable for these materials.
4. Students can easily understand the concept of addition using the (+) operation with the number symbolized (-) and the operation (-) with the number with the symbol (-) which the authors often encounter in students is a confusing thing because so far it has not there is a learning media suitable for addition and subtraction of integers.
5. The material used to make the media number ruler is very easy to obtain and also easy to make, the price is very cheap.

b. Deficiency
1. Limited number of numbers used
2. The media used is easily broken because the basic material is sterefome
3. Can only use two arithmetic operations, namely addition and subtraction, excluding multiplication and division
4. The form of arithmetic operations is still abstract (positive and negative and plus and less).

Learning Outcomes
According to Kingsley in Kurniawan (2014: 9) differentiates student learning outcomes into three types, namely 1) skills and habits, 2) knowledge and understanding, 3) attitudes and ideals. Each group can be filled with the material specified in the school curriculum.
According to Bloom (in Kurniawan (2014: 10), the learning outcomes are classified into three parts, namely cognitive, effective, and psychomotor.

1. Cognitive Learning Outcomes
Cognitive learning outcomes, namely learning outcomes that have something to do with memory, intellectual thinking abilities. In this category the learning outcomes consist of seven hierarchical levels. The seven

cognitive learning outcomes include: 1) knowledge, 2) understanding, 3) application, 4) analysis, 5) synthesis, 6) evaluation, 7) creativity.

2. Affective Learning Outcomes

Learning outcomes in the affective domain refer to learning outcomes in the form of feeling or emotional sensitivity. The types of learning outcomes in this area consist of five types which form the stages as well. The five affective domains include: 1) sensitivity, 2) participation, 3) assessment and attitude determination, 4) organization, 5) formation of life patterns.

3. Psychomotor Learning Outcomes

Psychomotor learning outcomes are in the form of certain motor skills. The ability to move is also graded, starting from simple movements that may be done reflexively to guided complex movements to creative movements. According to Simpson (Kurniawan, 2014: 12-13) these psychomotor movements include: 1) perception, 2) readiness, 3) guided movement, 4) habitual motion, 5) complex motion, 6) adjustment, 7) creativity. Gagne in Kurniawan (2014: 14) proposes five categories of learning outcomes to be formed from the learning process, namely: 1) intellectual skills, 2) strategies cognitive (cognitive strategy), 3) verbal information, 4) motor skills, 5) attitude.

So from the description above it can be concluded that learning outcomes are a student's ability or skill obtained from several assessments or evaluations.

FACTORS AFFECTING LEARNING OUTCOMES

A. Internal Factors

Internal factors are factors that come from the students themselves which are included in this factor

1) Physiological Factors

In general, good physiological conditions such as excellent health, not being tired and tired. Not in a state of physical disability, and so on. Everything will help in the process and learning outcomes. Apart from a good physiological condition, another thing to note is the five senses. Because the conditions of the five senses also have an influence on the learning process and outcomes.

2) Psychological factors

Every human being has different conditions and these differences will also affect the process and learning outcomes of each. Included in psychological factors are intelligence, attention, interests and talents, motives and motivation, cognitive and reasoning power.

B. External Factors

External factors, namely factors that come from outside the student, which are included in this factor are:

1) Family factors, students who learn will receive influence from the family in the form of: how parents educate, relationships between family members, household atmosphere and family economic conditions.

2) School factors, school factors that influence learning include teaching methods, curriculum, teacher-student relations, student-student relations, school discipline and school time, lesson standards. The condition of the building, learning methods and homework.

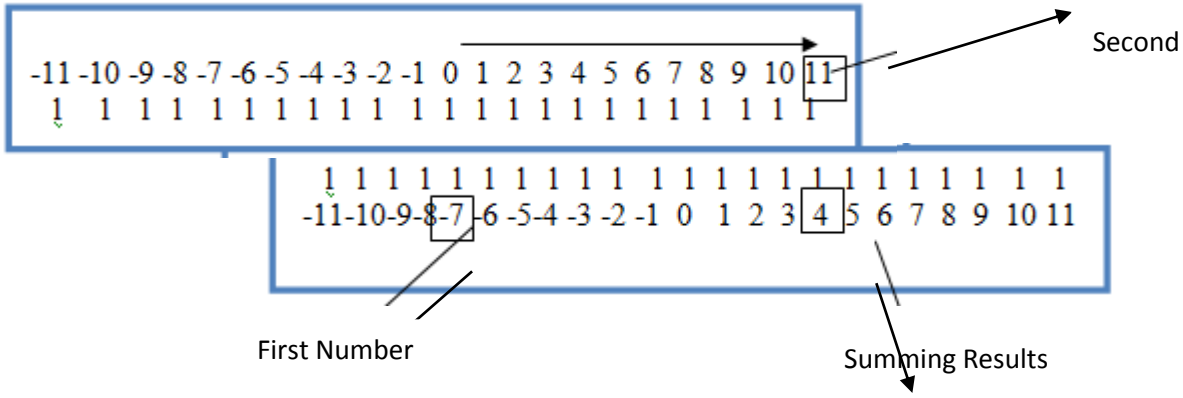
3) Community factors, society is very influential on student learning because of the existence of students in society. Like student activities in society, the influence of students' associates and community life around students also affects student learning.

The use of the media of number ruler in the material of addition and subtraction of integers

In the learning process, the activity of adding and subtracting integers begins with saying greetings, praying according to their respective religions and beliefs, communicating about student attendance, Apperception, "Who still remembers yesterday's lesson about integers?", Conveying the topics and learning objectives to be achieved,

The next activity explained the material for addition and subtraction of integers, explaining how to use the media of the number ruler on the material for addition and subtraction of integers. Give an example of how to use the media number ruler, which consists of two rulers of the upper and lower rulers consisting of negative

integers, zero, and positive integers. The two rulers are placed parallel to the top and bottom of the ruler which moves only the bottom ruler if a number is added with a positive integer then the direction is to the right otherwise if a number is added with a negative integer then the direction is to the left.
Example:
-7 + 11 =….
How to do it as follows



Pair the number -7 on the ruler with the number 0 on the top ruler, then see the number 11 on the top ruler turns out to be paired with the number 4 on the bottom ruler so that -7 + 11 = 4, after that distribute the worksheets in each group. Students work on the worksheets using number ruler media in accordance with the instructions, each group presents the results of their work. After completing the students presented the results of their work, students were asked to conclude the discussion material.
The final activity of students is guided to conclude the material as a whole. Students are given an evaluation of the material given. Students are given homework as homework, pray home.

RESEARCH METHODS

This research uses pre-experimental design or non-design because this design is not an actual experiment. The form of pre-experimental design or non-design used is one group pretest-posttest design, namely in this design there is a pretest, before being treated. known to be more accurate, because it can compare with the situation before being treated.

Pre-test	Treatment	Post-test
O_1	X	O_2

This research was conducted in class IV SDN 31 Kota Selatan, amounting to 28 students.

RESULTS AND DISCUSSION

This research is a quantitative research conducted to find out whether there is a mainstreaming of using number ruler media on learning outcomes for addition and subtraction of integers in grade IV SDN 31 Kota Selatan. Student learning outcomes can be known through tests. The test is carried out twice, namely the initial test or pre-test and the final test, namely the post-test. The initial test is carried out before being given treatment or treatment while the final test is carried out after being given treatment or treatment. The treatment in question is to use the media with number ruler in the learning process. The first in this study is to do the validity of the test in order to find out whether the test is valid or not. The validity of the test was carried out on fourth grade students of SDN 83 Kota Tengah. The test is in the form of questions
Multiple choice (objective) as many as 25 items, after being validated there were 19 valid questions and 6 numbers were invalid. After that, the reliability test was carried out to determine the reliability criteria.
The research process was carried out for four meetings, the first meeting was conducting a pre-test. This pre-test is carried out before giving treatment or treatment, then the second and third meetings are given treatment, namely by using the media number ruler in learning and the last meeting for data collection. The material taught during the research is addition and subtraction of integers.

Description of Student Learning Outcomes Before Using Number Ruler Media (Pre-test).

The pre-test was carried out on Friday, 19 July 2019. At this meeting, a study was conducted without giving any treatment or treatment (number ruler media). The results obtained from the pre-test test were the lowest score was 31.57 and the highest score was 73.68 and the average obtained was 53.19. It can be seen that there are 28 grade IV students at SDN 31 Kota Selatan, before being given treatment or treatment using the media. number ruler in learning addition and subtraction of integers, namely students who get a value of 31.57 = 2 students, 36.84 = 3 students, 42.10 = 4 students, 47.36 = 4 students, 52.63 = 4 students, 63.15 = 6 students, and 73.68 = 5 students. This means that there are no students who have completed the KKM. 5 students have almost reached the completeness of the KKM.

Student Learning Outcomes Data after Using Number Ruler Media (Post-test).

The post-test was carried out twice, namely on July 22-25. At this meeting, a study was carried out using a treatment or treatment (number media). The results obtained from the post-test test with the lowest score was 52.63 and the highest score was 100 and the average obtained was 78.38. It can be seen that the fourth grade students at SDN 31 KotaSelatan totaling 28 students, after being given treatment or treatment using the media number ruler in learning addition and subtracting integers, namely students who get a value of 52.63 = 2 students, 57.89 = 3 students, 63.15 = 3 students, 68.42 = 3 students, 78.94 = 5 students, 89.47 = 5 students, 94.73 students = 4 students , students who get a score of 100 are 3 students. So the number of students who reached the KKM was 17 students and those who had not reached the KKM were 11 students.

Normality Test Pre-Test and Post-Test

The researcher performed the data normality test calculations using the Liliefors formula. The Liliefors test is done by finding the L_count value, which is the largest F (zi) - S (zi) value. The pre-test and post-test data normality test was carried out to test the normality of the data whether it was normally distributed or not. After testing the normality of the data obtained, namely pre-test = 0.131 and post-test = 0.119

Determine the testing criteria pre-test:

If L_hitung <Ltabel then H0 is accepted

If L_hitung> Ltabel then H0 is rejected

Based on the research criteria, the test is Lcount = 0.131 and Ltable = 0.167. So Lhitung <Ltabel then H0 is accepted.

Determine the test criteria post-test:

If L_hitung <Ltabel then H0 is accepted

If L_hitung> Ltabel then H0 is rejected

Based on the research criteria, the test is Lcount = 0.119 and Ltable = 0.167. So Lhitung <Ltabel then H0 is accepted.

CONCLUSIONS

Based on the results of the research and discussion above, it can be concluded that there is an effect of using number ruler media on learning outcomes for addition and subtraction of integers in grade IV SDN 31 Kota Selatan Kota Gorontalo. This is evidenced by the results of the hypothesis obtained t_{hitung} 10.168 dan t_{tabel} 2.051 to a significant degree α = 0.05. So value t_{hitung}> nilai t_{tabel} thenH_0 rejected andH_a received.

This research can be used as an alternative media in learning addition and subtraction of integers to improve student learning outcomes. Based on these conclusions, the researchers provide the following suggestions: 1) Students foster more creativity and enthusiasm for learning so that they get good results for the future, especially in the eyes of Mathematics students. 2) The teacher should provide variations in learning including using the media of number ruler in learning addition and subtraction of integers whose concepts are abstract. 3) Schools are expected to be able to provide the media needed in the implementation of learning. Because in the implementation of teacher learning it is expected to use appropriate learning media to make it easier for students to understand the subject matter delivered by the teacher. 4) For further researchers, it is expected to study more sources and references related to the media of the number ruler so that the research results can be better and more complete.

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