THE APPLICATION OF BLENDED LEARNING WITH CONCRETE MEDIA TO IMPROVE THE ABILITY TO CALCULATE DIVISION IN SD MUHAMMADIYAH 11 SURABAYA

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DOI: https://doi.org/10.21107/Widyagogik/v9i2. 13080

Received November 06, 2021; Revised December 02, 2021; Accepted December 22, 2021

Abstract

This research aims to describe the application of blended learning models with concrete material and describes the improvement of students' learning outcomes in the application of blended learning with concrete media assisted in dividing materials. This research is a class action research (PTK). The subject of the study was a 2nd grade of Al Alaq Sd Muhammadiyah 11 Surabaya. The results of this study are (1). Research is carried out in two cycles, where each cycle has four steps, namely planning, implementation, observation and reflection. (2). Increase in learning outcomes ranging from pre-cycle by 60.5, cycle 1 by 70.6, cycle 2 by 86.7 and Percentage of classical completion in pre-cycle by 33.3%, cycle 1 by 66.7% included in sufficient category, cycle 2 to 83.3% belongs to good category. From the results of the research obtained, it was concluded that the blended learning model with concrete media can improve the learning outcomes of students in the 2nd grade of Al-Alaq SD Muhammadiyah 11 Surabaya. This research can be utilized by elementary school teachers as a reference to improve the learning outcomes of 2nd grade students on division materials.

Keywords – Concrete Media, Blended Learning, Sharing, Learning Outcomes.

1. Introduction

Mathematics is one of the important sciences, many things around always related to mathematics. A person learns a lot of mathematics when he is in school. But for some, mathematics is difficult and frightening (Wahyudy, Putri. (2019).

Mathematics subjects aim so that learners have the following abilities; (1) Understand mathematical concepts, explain the interrelationships between concepts and apply concepts or algorithms, flexiblely, accurately, efficiently, and precisely in problem solving, (2) Using reasoning on patterns and traits, performing mathematical manipulations in making generalizations, compiling evidence, or explaining mathematical ideas and statements; (3) Solve problems that include the ability to understand problems, design mathematical models, complete models and interpret acquired solutions, (4) Communicate ideas with symbols, tables, diagrams, or other media to clarify circumstances or problems; (5) Have an attitude of appreciating the usefulness of mathematics in life, namely having curiosity, attention, and interest in studying mathematics, as well as a tenacious and confident attitude in problem solving (Yayuk, 2019).

The scope of mathematics includes, (1) Numbers; (2) Geometry and measurement; (3) Data processing. Numbers rank first because in mathematics they are always related to numbers, which includes the operation of counting. Numeracy is a branch of mathematics concerned with the nature of the relationships of real numbers with their calculations concerning addition, subtraction, multiplication, and division.

Humans always use counting operations in everyday life. At least the basic calculation concept involving addition, subtraction, multiplication and division must be mastered perfectly (Wahyudy et al., 2019). Most students have difficulty performing counting operations. Division is a basic calculating skill that is considered the most difficult to learn and teach.

Division is the opposite of multiplication, and multiplication is in fact a short way of summation. Divisional operation skills must be based on addition, subtraction and multiplication skills. Division includes counting operations that must be mastered after understanding the concept of addition and subtraction operations. The skill of performing division operations is closely related to addition and division. Children who cannot reduce also cannot divide, and children who cannot multiply are also unable to divide (Oswita, 2021). In Indonesia in general, teachers see all students who achieve low learning achievement called students with learning knowledge. Learning difficulties are suspected by certain obstacles in achieving learning outcomes, with lower achievement than they should be (Nusroh & Luthfi, 2020). Academic learning difficulties of elementary students are called difficulty reading, writing, counting (calistung). Difficulty learning mathematics is called discalkulia (dyscalculis) which is difficulty to work on numbers when counting. Lerner pointed out, common mistakes made by children who study mathematics are a lack of understanding of (1) symbols, (2) place values, (3) calculations, (4) the use of erroneous processes, and (5) illegible writing (Hidayat et al., 2019). Most have difficulty and feel saturated in studying the material of division. Elementary school children in grade 2 are on average 8 years old which is in line with Piaget's theory (Juwantara, 2019) states that children aged 7-11/12 years enter the concrete operational stage where the child is mature enough to use logical thinking or surgery, but only for physical objects that exist today. At this stage, the child has lost his tendency towards animism and artisialism. Most have difficulty and feel saturated in studying the material of division. Elementary school children in grade 2 are on average 8 years old which is in line with Piaget's theory (Juwantara, 2019) states that children aged 7-11/12 years enter the concrete operational stage where the child is mature enough to use logical thinking or surgery, but only for physical objects that exist today. At this stage, the child has lost his tendency towards animism and artisialism. Reality in the field, teachers convey learning by lecture methods, without using media in

teaching, teachers have not given students space to be independent, so students feel less involved in learning, causing students difficulty to cultivate critical thinking skills in understanding the material because it only capitalizes memorization without understanding concepts, which memorization will quickly disappear so that students feel saturated in learning and consider this division material difficult (Afiani & Putra, 2017).

During the Covid-19 pandemic, learning was carried out online. This makes teachers, students and parents of students adapt to new ways of learning. Teachers are required to continue to innovate in order to strive for learning with existing limitations so that students get maximum learning results. One way to optimize learning is to choose the right learning model and media for the student's condition. One learning model that can be used today is blended learning. According to Rovai and Jordan (Syarif, 2012) the blended learning model is basically a combination of learning advantages that are done face to face learning and virtually (e - learning). Online learning or e - learning in blended learning becomes a natural extension of traditional classroom learning that uses a face to face learning model.

According to the results of initial observations at Muhammadiyah Elementary School 11 Surabaya in the 2nd grade of Al Alaq in the 2021/2022 school year, it is known that students have difficulty in understanding math lessons in the division material, as evidenced by the results of daily assessments given, only a few students meet the minimum completion criteria (KKM). From the description above, it is seen that the characteristics of students at elementary age are at the concrete operational stage in understanding a concept so that learning must be done as the stage of development. To overcome this problem, the blended learning model is very important in Mathematics, because it will form a better understanding concept for students of the material, especially if supported by the use of appropriate media (Putra & Afiani, 2021). From the research that has been conducted by (Islami et al., 2021) in his research that the application of blended learning models assisted by

concrete material media to improve learning outcomes in the building materials of 2nd grade students is obtained the conclusion that the research is able to improve student learning outcomes.

The purpose of this study is to describe the process of applying blended learning models in division materials and describes improving the learning outcomes of 2nd grade students al Alaq by applying blended learning models using concrete media in the division material.

2. Method

This research is a class action research (PTK). The procedure of conducting research used follows the basic principles of class actions that refer to the views of Kemmis and Taggrat (Islami et al., 2021) which is class action research that begins with planning, implementation, observation, and reflection.

In this study consisted of several cycles, one cycle loading once meeting. If in cycle 1 has not met the criteria of completion, then cycle 2 (Arikunto, 2021) can be done in order to meet the criteria of completion that has been determined. If in cycle 2 the criteria have not been met, the next cycle can be done until the desired target is reached with the criteria listed. Each cycle follows the stages or procedures of planning, implementation, observation and reflection.

The subject of this study is 18 students of Muhammadiyah Elementary School 11 Surabaya class 2 Al Alaq Year of Study 2020/2021 consisting of 10 students and 8 students. The data that will be collected in this study is qualitative data. Data collection techniques to be used in this study. It uses observations, and tests. Observation is used to find out student activity.

Tests are used to determine the student's learning outcomes. The research instruments to be used in this research are as follows: (1) the observation sheet of student activities; (2) pre-test and post test question sheets

The test question in the form of ten stuffing questions is given to students at the beginning before learning. The test problem is given through a share

screen zoom, before students do the teacher test problem provides motivation for students to do the test problem independently. Students work on test questions while keeping the zoom on in an effort to make sure they're working on the test independently. After the test is completed, the Teacher begins learning and guides the student's activities in calculating the division with concrete media such as peanut seeds via zoom. Students have been informed to prepare the required equipment at least two days before the implementation of the practice during lesson hours. Not only students, teachers must also convey to the student guardians so that preparation is more maximal. If in the process of using media students have difficulties, students are allowed to ask for help from people who are around them, such as older brothers, parents, grandparents. After completion of practice, students are given the opportunity to study independently at home, the second test problem will be given at the end of learning. After the research is done, the data obtained will be analyzed.

The next implementation is done face-to-face in school, the teacher provides motivation for students to listen to the material that will be repeated. The teacher begins learning, then prepares and guides the student's activities in calculating the division with concrete media such as bean seeds. Students have been given information to carry the required equipment. If in the process of making the student media have difficulties, students are allowed to ask the teacher for help. After completion of practice, students are given the opportunity to learn independently, then the second test will be given at the end of learning. After the research is done, the data obtained will be analyzed.

The medium of concrete objects selected is right, namely peanut seeds, because it is easy to get and very cheap in price.

From the collected data analyzed descriptively using individual percentage and completion techniques using the specified KKM reference, classical completion (Arifin, Zainal, 2014) can be calculated using the following formula:

$$PK=\frac{JT}{JS}\ X\ 100\%$$

Information:

PK = percentage of classical completion

JT = number of completed students

JS = total number of students

To calculate the grade point average (Arifin, 2014) can be calculated with the following formula:

$$\bar{X} = \frac{Jumlah\ nilai\ seluruh\ siswa}{jumlah\ siswa}$$

Student observation data will be analyzed i.e. for the answer "yes" will be given a score of 1 and the answer "no" is given a score of 0. Furthermore, the results of observation of student activities on the application of blended learning models assisted by concrete material media, the percentage of student activity observation results are formulated as follows.

$$P = \frac{jumlah\ skor\ yang\ dicapai}{skor\ maksimal} \times 100\%$$

Furthermore, the percentage is categorized according to the qualification of the observation percentage results, namely in Table 1.

Table 1. Observation Results Qualification Guidelines

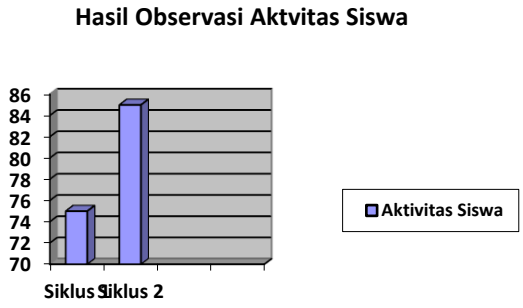
Persentase	Kategori
66,68% ≤ P ≤ 100%	Tinggi
33,34% ≤ P ≤ 66,67%	Sedang
0% ≤ P ≤ 33,33%	Rendah

3. Result and Discussion

This study describes the results of observation of student activities and student learning outcomes on the application of blended learning models assisted by concrete material media in the material of the division of students in the 2nd grade of Muhammadiyah 11 Surabaya Elementary School. The concrete medium used in this study is bean seeds, as they are easy to obtain. The application of blended learning assisted by concrete material media to improve learning outcomes in the material division of students in the 2nd grade of Muhammadiyah 11 Surabaya Elementary School, includes four stages, namely planning,

implementation, observation and reflection. The planning stage includes the creation of RPP, test questions and research instruments in the form of observation sheets of teacher and student activities. The implementation stage includes learning using zoom applications in applying blended learning assisted by concrete material media. At this stage, students practice calculating divisions using peanut seeds in their respective homes guided by teachers through a power point-assisted zoom. At the end of learning students are given test questions as reflection and as a reference to student learning outcomes. The observation stage includes observation of student activities carried out by teachers during learning and observation results written in observation sheets. The Evaluation stage is after learning is completed, researchers evaluate the learning process and student learning outcomes. At this stage the researcher determines the action to be taken on the next lesson.

The results of observations on this study showed that students in cycle I who had a percentage of 75%. Student activity in cycle I is included in the high category, but students still struggle when the practice of calculating the division of each house looks less orderly. The results of observations of student activity in cycle II which has a percentage of 85%, an increase of 10% from the results of observations in cycle I. Student activity in cycle II is included in the high category. In cycle II students can overcome the difficulties faced when the practice of calculating division in school, because it gets direct guidance from teachers.



Results of Improvement in Cycle 1 Learning

The student's learning outcome in this pre-cycle is before students follow the learning with the application of blended learning models assisted by concrete material sharing media. The percentage of classical completion in this pre-cycle is 33.3% meaning that 12 out of 18 students get a grade below 80, while the other 6 students have reached a score of 80. In the pre-cycle student learning outcomes

have not achieved classical completion. In the 1st cycle learning with the application of blended learning models using concrete media in the subjects of mathematics division materials in class 2 Al alaq SD Muhammadiyah 11 Surabaya obtained the following results:

Table 2. Results of Cycle 1 Post Test Score

Student	Score	Completion criteria
Aby	80	Finished
Ali	80	Finished
Qila	90	Finished
Dipa	30	Unfinished
Eza	90	Finished
Arsya	60	Unfinished
Java	90	Finished
Kafa	100	Finished
Amel	90	Finished
Kayla	20	Unfinished
Faiq	90	Finished
Arka	80	Finished
Keanu	20	Unfinished
Naura	80	Finished
Sahsi	50	Unfinished
Lala	90	Finished
Nafis	80	Finished
Yusuf	60	Unfinished
Grade Point Average		70,6
Classic finish		66,7 %
Classical Incompetence		33,3 %

Based on the research data that was unraveled in table 1 post test grade results 1 obtained an average of classical completion results in 2nd grade students Al alaq which amounted to 18 students, namely 66.7%, average achievement by 33.7% and average post test score 1 class 2 Al alaq of 70.6. The average increase in classical completion in grade 2 Al alaq has increased by 33.4% compared to the results obtained by researchers in the evaluation of learning conducted before the study, where the results of the classic completion criteria of the class by 33.3%. While the average post test score of 1 in class 2 Al alaq of 70.6 is still below KKM because KKM in Muhammadiyah Elementary School 11 Surabaya for Mathematics subjects is 75. The above is the underlying improvement of cycle 2 learning.

Improvement of Cycle 2 learning is done with the same learning model and media because it is seen from the criteria of classroom completion has increased which indicates that blended learning with concrete media can help improve student learning outcomes and based on reflections carried out there is a lack of learning in cycle 1 lies in the teacher has not done the perception and lack of teacher feedback in response to student response.

Results of 2nd Cycle Learning Improvement

Based on the improvement of cycle 2 learning with the application of blended learning models using concrete media that in mathematics subjects of division materials in grade 2 Al alaq SD Muhammadiyah 11 Surabaya are obtained the following results :

Table 3. Post Test Score Results 2 Cycle 2

Student	**Post Test 2 Score**	**Criteria**
Aby	100	Finished
Ali	100	Finished
Qila	90	Finished
Dipa	100	Finished
Eza	90	Finished
Arsya	90	Finished
Java	90	Finished
Kafa	100	Finished
Amel	90	Tunats
Kayla	40	Unfinished
Faiq	100	Finished
Arka	100	Finished
Keanu	20	Unfinished
Naura	100	Finished
Sahsi	80	Finished
Lala	100	Finished
Nafis	90	Finished
Yusuf	80	Unfinished
Grade Point Average		86,7
Classic finish		83,3%
Classical Incompetence		16,7%

Based on the research data that decomposed in table 2 the results of post test value 2 obtained the average result of class completion criteria of 83.3%. The

average increase in classical completion in grade 2 alaq has increased by 50% compared to the results obtained by researchers in the evaluation of learning conducted before the study, where the results of the classic completion criteria of the class by 33.3% and the average post test score of 2 by 86.7. From this data seen, both the average completion of the class and the average post test 2 score have increased and the grade point average in post test 2 has met the KKM in school, namely for math lessons 75, therefore it can be concluded that blended learning with concrete media on the division material in elementary school can be used to improve student learning outcomes.

From the results of the study above, the results of the comparison of the percentage of class average values and classical completions in the following bar diagram:

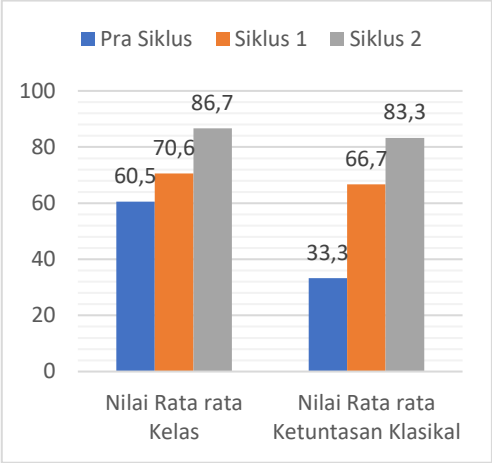


Figure 2. Comparison of Average Values & Completion of Classic Pre-Cycle, Cycle 1 and Cycle 2

Based on the bar diagram presented seen the results of the initial test, post test 1 and post test 2 both grade point average and classical completion moved up meaning there was an increase in student learning outcomes after the implementation of blended learning with the help of concrete media on the distribution material in class 2 Al alaq SD Muhammadiyah 11 Surabaya.

4. Conclusion

Based on the results of observations obtained in cycle 1 and cycle 2, the results of this class action (PTK) study can be concluded as follows: (1)

The application of blended learning model assisted by concrete material media can be improve learning outcomes in the division material of 2nd grade elementary students Muhammadiyah 11 Surabaya, each cycle includes planning, namely the creation of RPP, test questions and research instruments in the form of observation sheets of student activities. Implementation includes learning using zoom applications in applying blended learning assisted by concrete material media. Student learning outcomes have increased can be seen from the classical completion which was initially only 33.3%, then in cycle 1 by 66.7% in the category quite experienced an increase of 33.4% with an average score of 70.6, while for classical completion in cycle 2 by 83.3% in the good category and experienced an increase of 16.6% from cycle 1 and the average class of 86.7 has met KKM. This proves that both individually and classically learning has met the criteria of completion.

Based on the results of the research obtained, the researcher provides some suggestions as follows: (1) before choosing the learning model and media to be used should the teacher must understand the characteristics of students and materials; (2) Teachers can use blended learning with concrete media on 2nd grade division materials to improve student learning outcomes; (3) 2nd grade teachers in teaching division should not use rote methods, teachers should be more creative in KBM so that students are not saturated and easily receive material.

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