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THE IMPLEMENTATION OF INTERACTIVE MULTIMEDIA TO IMPROVE LEARNING OUTCOMES IN FRACTION AT PRIMARY SCHOOL

Mahdalena

SDN 41 Sungai Ambawang, Kubu Raya, Indonesia

E-mail: mahdalen@gmail.com

Abstract

The study was a classroom action research conducted at SDN 41 Sungai Ambawang, located on Jalan Sambas Timur Perumnas IV Sungai, Kubu Raya Regency, in IV grade with a total of 30 students. The formulation of the problems in this study are: (1) How is the planning of learning using interactive multimedia on fraction material in IV grade SDN 41 Sungai Ambawang; (2) How is the implementation of learning using interactive multimedia on fraction material in IV grade SDN 41 Sungai Ambawang; (3) What are the learning outcomes of students after using interactive multimedia on fractions material in IV grade SDN 41 Sungai Ambawang. Data collection techniques in this study used tests, interviews, observation, and documentation. While the data analysis technique used analysis and reflection in each cycle, based on data and results of observations, analysis, and reflection carried out by educators as researchers. In learning planning using interactive multimedia on fraction in IV grade at SDN 41 Sungai Ambawang has been done well. It can be seen from the scores obtained in the preparation of RPP, each component has increased. In Cycle I, an average score of 72.05% increased in Cycle II to 88.9%, with an increase of 16.85% difference. The implementation of learning using interactive multimedia on fraction in IV grade at SDN 41 Sungai Ambawang, based on the results of colleagues' observations, that the implementation of learning using interactive multimedia has been appropriately implemented as expected. It can be seen from the assessment of teacher activity in the first cycle an average of 67.5% was obtained, then an increase in the second cycle to 92.5%, an increase of 25%.

Keywords: *Fraction, Interactive Multimedia, Learning Outcomes*

Introduction

In the era of globalization, technological developments have a good impact on education, especially in the presentation of learning media in multimedia, which presents messages that can be seen, heard, and even operated. The use of multimedia in learning the concept of fractions is very effective, fun and makes it easier for students to obtain information so that students are motivated to learn mathematics. The selection and use of appropriate multimedia can enhance the quality of student learning outcomes of fraction concepts. Therefore the role of multimedia as a learning medium is very important in learning mathematics.

The use of multimedia in mathematics learning in elementary schools is expected to overcome students' learning difficulties. It can improve the quality of learning mathematics on fraction material in elementary schools. Thus, the learning outcomes will be more optimal as expected. Through multimedia learning, it is expected to enhance the quality of the learning process, which can affect student learning outcomes and the achievement of goals in the

learning process. The learning process's achievement is marked by changes in behavior, both concerning cognitive, affective, and psychomotor changes. The selection and use of appropriate learning media also determine students' ability to absorb the messages conveyed and students' learning success. Multimedia is expected to be able to help students understand the concept of fractions. With learning using multimedia, students are invited to be directly involved in the learning process.

The success of the learning process in schools cannot be separated from an educator's significant role in managing learning in their class. Educators play an important role in learning in schools. Educators are facilitators and managers of the learning process, Somekh, and Davis (in Ishak Abdulhak and Deni Darmawan, 2013: 101). Professional educators must be able to design effective and relevant learning according to the conditions of students in their class, master a variety of learning strategies, choose appropriate learning methods and models, and be able to use or develop learning media in accordance with the message to be conveyed so that the message can be absorbed easily by students. Thus the expected learning outcomes will be achieved.

Mathematics is a subject that exists at all levels of education, from elementary school to higher education. Even mathematics is taught in kindergarten informally (Ahmad Susanto, 2013: 30). Mathematics is one of the most useful human knowledge in life. Almost every part of our life contains mathematics. Mathematics plays a role in forming the logic of the thinking of students. However, many students cannot absorb the subject matter delivered by educators. The strategies and learning methods being carried out are not appropriate, so that mathematics becomes a subject that is considered difficult and even boring.

The difficulty can be seen from the lack of meaning in the learning activities carried out by educators and the difficulty in procuring instructional media. As a result, educators usually directly teach number recognition, as in the fraction $\frac{1}{2}$, 1 is called the numerator, and two is called the denominator (Heruman, 2013: 43). It was also difficult for IV grade students to learn fractions at SDN 41 Sungai Ambawang. It is evidenced by the results of the initial observation conducted by the author on January 23, 2019, by conducting interviews with 3 students of IV grade at SDN 41 Sungai Ambawang, who have different cognitive abilities. The results of the interview indicated that the math material that was considered the most difficult was fractions. Fractions material is material whose scope is quite broad and contains mathematical concepts that confuse students. The difficulty of studying fraction material experienced by students can be seen from the number of students who did not complete the daily test of fraction material, with Minimum Completion Criteria (KKM) of 65%, only 25.81% of students who achieved learning completeness while not complete reached 74.19%. Incomplete learning of students in understanding the concept of fractions will continue to the next fraction material. It is evidenced by observations in IV grade when the learning process took place, namely on January 25, 2019, for educators and also students. In the learning process, educators only used the lecture method and LKS books without using media that could motivate and activate students, only a few people only students pay attention to the educator's explanation. In contrast, the others are busy by themselves, telling stories and playing with their classmates so that the class becomes noisy.

The results of observations indicated that the problems that cause the students' lack of understanding of SDN 41 Sungai Ambawang towards fraction material were: (1) The learning process did not activate students so that the learning motivation of students to take part in learning fractions was very low; varied learning resources or learning media that can attract students learning interest so that students' learning outcomes were low on fraction material.

From the data and problems of students in the IV grade at SDN 41 Sungai Ambawang, the authors feel interested in overcoming them with attractive learning media. Students were

more motivated and more interested in the learning process of mathematics. The media that will be used by the author was interactive multimedia.

Through interactive multimedia, it is hoped that it can overcome learning difficulties students face and increase learning motivation and learning outcomes of IV grade students at SDN 41 Sungai Ambawang on fraction material so that the expected learning objectives are achieved. The achievement of learning objectives in the learning process is marked by changes in behavior, both those involving cognitive, affective, and psychomotor changes. With multimedia, students are invited to be directly involved in the learning process. Students are asked to solve problems and problems independently.

The low learning outcomes of fourth-grade students at SDN 41 Sungai Ambawang, the author, is interested in conducting classroom action research (PTK) with the title "Using Interactive Multimedia as an Effort to Improve Learning Outcomes on Fractional Material in IV grade SDN 41 Sungai Ambawang".

Based on the background of the problems described above, the researchers formulated a general problem in this paper, "How to Use Interactive Multimedia as an Effort to Improve Learning Outcomes on Fractional Materials in IV grade SDN 41 Sungai Ambawang?"

To limit this general problem, the formulation of this problem is specifically described as follows (1) How is the planning of learning using interactive multimedia on fraction material in IV grade SDN 41 Sungai Ambawang; (2) How is the implementation of learning using interactive multimedia on fraction material in IV grade SDN 41 Ambawang River?; (3) What are the learning outcomes of students after using interactive multimedia on fractions material in IV grade SDN 41 Sungai Ambawang?

Research Method

The form of this research was Classroom Action Research. This research was conducted collaboratively by researchers with colleagues at SDN 41 Sungai Ambawang. The research was carried out in 2 cycles to see the increase in student learning outcomes in mathematics about fractions. This research took place at SDN 41 Sungai Ambawang, located at Jalan Sambas Timur Perumnas IV. The research time was carried out starting in February 2018 (semester 1) for one month in 2 cycles. Cycle 1 was carried out in the first and second week, while cycle II was carried out in the third and fourth weeks. The subjects in this study were 30 students of IV grade at SDN 41 Sungai Ambawang. At the same time, the object in this study was to improve the learning outcomes of fraction material using interactive multimedia.

In this research, the researcher used the following data collection techniques: (1) Test, (2) Interview, (3) Observation; (4) Documentation. This study used analysis and reflection in each cycle based on data and results of observations, analysis, and reflection carried out by educators as researchers. The analysis used descriptive statistics, especially the comparison of means. The data analysis technique used was the percentage description. The research data analyzed included the class average, individual learning limitations, and class-based learning limitations.

Furthermore, the results of the analysis can be obtained both qualitatively and quantitatively. This research was planned to be carried out in 2 cycles of action. Each cycle was held two meetings (face to face). Each cycle was carried out according to the changes to be achieved after each reflection, but if it has not met the target, then the next cycle will be carried out. The results of improvements in research have been carried out to achieve the classical learning achievement target of $\geq 75\%$. In addition, the scores of the activities of educators and students were in a good category, so this research stopped at the second cycle stage.

Result and Discussion

The mathematics learning outcomes of students before being given the action were classified as very low. It can be seen that the number of students who did not complete the study compared to students who studied completely. Many students who have completed learning are 12 (40%) of the 30 students. In this initial test, the students' average score was 69. It was very far as expected because it did not reach the specified Minimum Criteria Completion score of 75, and the percentage of classical learning completeness scores reached $\geq 75\%$. With classroom action research steps consisting of (1) Planning In the planning stage of this first cycle, the first thing to do is compile a lesson plan with interactive multimedia. Observation instruments were arranged in the form of student activity observation sheets and teacher performance observation sheets to observe teacher performance and student activities during the learning process;; (2) Research implementation, where the research showed the average score of learning outcomes at the first meeting of the cycle I is 70.16, the highest score at the first meeting was 80, and the lowest score was 40. The number of students who completed was 17 people with a percentage of 56.7%, and students who did not complete were 13 people with a percentage of 43.3%.

Furthermore, at the second meeting of the first cycle, the average score of student learning outcomes was 74.66, the highest score for this second meeting was 90, and the lowest score was 55. The number of students who completed was 19 people with a percentage of 63.3 and the number of participants. There were 11 students who did not complete with the percentage of completeness of 36.7. At the same time, the classical average score in the first cycle is 72.41. This score was low because it still has not reached the specified KKM, namely ≥ 75 . Based on the results obtained from the implementation of the action cycle I, it showed an increase in students' learning process and results, but there were still students whose scores have not reached the minimum completeness standard. The teacher and students carried out the deficiencies in cycle I were then corrected in cycle II; (3) Observation, the process of teaching and learning activities are supervised by peers who act as observers. Observation aimed to determine whether the implementation of learning was in accordance with the steps that have been designed in the lesson plan or not in using an interactive multimedia learning model. Learning outcomes were achieved due to the learning model application with interactive multimedia learning models; (4) Reflection, carried out to see the shortcomings of the cycle I to improve subsequent learning. In this study, the results of the reflection in cycle I were: (1) The teacher using an interactive multimedia learning model directed students to the concept of material that was accurate and clear through direct activities on how to solve real problems that have been experienced by students; (2) The teacher improved more directed learning steps, where the use of interactive multimedia learning models was so that students can understand and overcome any problems they experience in everyday life.

The research results in cycle II were carried out by the following activities: (1) Planning, which included preparing the Lesson Plan (RPP) for Cycle II. At this stage, the researcher prepared the teacher's observation sheet; (2) Implementation, wherein cycle II the results of the observation of the implementation of learning, observations on the implementation of lesson plans, observation of teacher and student activities in cycle II were monitored using an observation guide that has been prepared. At this second cycle meeting, the learning process carried out by the teacher has gone well. After implementing the learning using an interactive multimedia learning model, the teacher provided a post-test to determine students learning outcomes. The learning outcomes of students in cycle II were the average score of learning outcomes at the first meeting of cycle II was 79.5, the highest score at the first meeting was 100, and the lowest score was 65. The number of students who completed was 24 people with 80 %, and six students did not complete with a percentage of 20%.

Furthermore, at the second meeting of the second cycle, the average score of student learning outcomes was 85.33, the highest score of this second meeting was 100, and the lowest score was 75. The number of students who completed was 30 people with a percentage of 100% and students. None of the people who did not complete with a percentage of completeness of 0%. At the same time, the total score of classical completeness in the second cycle was 82.41. This score has exceeded the specified KKM, which is ≥ 75 . Based on the results obtained from the implementation of cycle II actions, it shows that there is an increase in the process and learning outcomes of students that have exceeded the minimum completeness standards; (3) Observation, in this activity data obtained from learning activities students in learning activities with interactive multimedia learning models have worked well because the acquisition of students' activeness scores at the first meeting obtained a score of 49 with an average of 76.56%.

Furthermore, at the second meeting, there was an increase to 61 with an average of 95.31. Overall, the total score of 110 was an average of 85.93%. The increase occurred because the teacher had corrected the deficiencies in cycle I. When the implementation of cycle II, students had orderly occupied the seats that had been arranged by the teacher, all students were enthusiastic about participating in learning, had understood understanding the learning model used by the teacher, there were interactions that was established between students and between students and teachers, enthusiastically paying attention to teacher explanations, trying to answer teacher questions, trying to come to the front of the class, so that the learning condition was conducive. The results of this observation did not need continue in the next cycle; (4) Reflection, based on the results of reflection in cycle II, the researcher decided not to take further action or cycle three because of the completeness of learning to measure the success of the activities that have been achieved. Simultaneously, with the results achieved in cycle II, students' learning activities using interactive multimedia learning models became the research objectives.

Based on Classroom Action Research results in Mathematics subjects using interactive multimedia learning models in IV grade at SDN 41 Sungai Ambawang showed an increase in learning outcomes and learning completeness of students individually and classically. It can be seen from the table below:

Table 1 Average Daily Scores for Pre-Cycle, Cycle I and Cycle II

No	Pre Cycle/Cycle	Total Students	Average Score
1	Pre I	30	69
2	Cycle I	30	72,41
3	Cycle II	30	82,41

Source: Results of Classroom Action Research

Based on the table above, we can see that the average daily score on the pre-test was 69, while in the post-test cycle I, it increased to 72.41, then in the second cycle, there was an increase to 82.41. To more clearly, the development of the daily average score in Pre Cycle, Cycle I, and Cycle II is shown in the following figure:

Source: Processed Data February 2019

Fig.1 Average Score of Daily Tests for Each Cycle

Figure 1 shows that IV grade students' average score at SDN 41 Sungai Ambawang after class action has increased significantly in each cycle. Based on data obtained from Cycle I, research and peers were not satisfied with the results obtained. Therefore it was necessary to take classroom action to the next cycle so that IV grade at SDN 41 Sungai Ambawang understands the subject matter better. Before carrying out the classroom action research in cycle II, the researchers and their peers held discussions to discuss the results of observations in the form of findings in cycle I.

From the efforts made in Cycle II class action, it turned out that it can achieve better results than classroom actions in Cycle I. It can be seen from an increase in learning outcomes and was also followed by an increase in learning activities. The implementation of this study was carried out in 2 (two) cycles, namely, cycle I and cycle II.

Conclusion and Suggestion

Based on the background, sub-problems, and findings, as well as the discussion in this study regarding the Use of Interactive Multimedia as an Effort to Improve Learning Outcomes on Fractional Materials in IV grade at SDN 41 Sungai Ambawang the following conclusions can be drawn: (1) In planning learning using interactive multimedia on the material The fractions in IV grade at SDN 41 Sungai Ambawang, have been done well. It can be seen from the scores obtained in the preparation of the RPP. Each component has increased in cycle I the average score of 72.05% increased in Cycle II to 88.9% with an increase of 16.85%; 2) The implementation of learning using interactive multimedia on fraction material in IV grade at SDN 41 Sungai Ambawang, based on the results of observations made by colleagues, that the implementation of learning using interactive multimedia has been carried out properly as expected. It can be seen from the assessment of teacher activity in the first cycle an average of 67.5% was obtained, then an increase in the second cycle to 92.5%, an increase of 25%; (3) The use of interactive multimedia learning models in fraction material in IV grade at SDN 41 Sungai Ambawang has been able to improve student learning outcomes, this can be seen in the first

cycle the classical average score of 72.41, then in the second cycle was increased to 82.41, of course with the results obtained. It has exceeded the KKM which is 75.

The suggestions that can be submitted from this research are as follows: (1) This multimedia can be used as a medium both at school and independently by students anywhere and anytime; (2) Educators are expected to be more active and creative in using multimedia learning, while students are more engaged in learning to gain a maximum learning experience; (3) For further researchers, more and more recent literature is needed to develop multimedia teaching materials for learning the concept of fractions so that multimedia will increasingly attract students to learn.

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