

**IMPROVING MATHEMATICAL LEARNING OUTCOMES USING  
ORIGINAL TEACHING AIDS AT 5<sup>TH</sup> GRADE STUDENTS IN SDN 189/V  
KUALA INDAH, WEST TANJUNG JABUNG DISTRICT  
LESSON YEAR OF 2018/2019**

**Sumarlan, Masda**

SDN 189/V Kuala Indah Tanjung Jabung Jambi

rumahs974@gmail.com

**Abstract.** This research is a classroom action research (PTK) and have been done in four cycles, each cycle consisting of planning, action, observation, and reflection. The aspects that observed in each cycle are the student activities, and the learning process of fractions using the original teaching aids. The subjects of this research were 15 students consisting of 6 male students and 9 female students. The results of research of the students' abilities in the fractions subject, each cycle have an improvement. Cycle I, the average score of the students was 53.80 with a percentage of completeness is 13.33%, students who achieved KKM only 2 students. Cycle II, the average score of students was 67.53 with a percentage of completeness is 66.67%, students who achieved KKM are 10 students. Cycle III, the average score of students was 77.33 with a percentage of completeness is 86.67%, students who achieved KKM are 13 students. From applying the three cycles, there was an improvement in students' abilities on the fractions subject. The increases of the average score from cycle I to cycle II is 13.73, the percentage increase to 53.33%, and the students who reach KKM increase to 8 students. The increase in the average score from cycle II to cycle III is 9.80, the increase in the percentage is 20%, and the increase number of students who reach KKM is 3 students. Based on the indicators of successes in the cycle III, shows that the teaching aids from the original objects that are applied can improve the students' abilities in the fractions subject in 5<sup>th</sup> grade of SDN 18/V Kuala Indah, West Tanjung Jabung District.

**Keywords:** Mathematics Learning Results, Original Teaching Aids

## A. Introduction

Ideally, a professional teacher must be able to implement the curriculum well. Teachers are expected to have expertise in creating a effective and efficient learning atmosphere in achieving the learning objectives that set out by the national curriculum.

Mathematics us one of the lessons that has its own character. Mathematics is abstract, while the elementary school age children think concretely (Markus, et al: 2015). According to Dienes (2010) that basically mathematics can be considered as the study of the structures and categorizing relations between structures. Russeffendi (1989) stated that learning mathematics for a child is a continuous process so it required the basic knowledge and understanding of mathematics is needed at the beginning of learning for the further learning. Sardiman (2004) state that learning is act, act to change behaviour into doing activities.

In fact, learning experiences give experiences to the students to master the basic competencies scientifically and in terms of the dimensions of competency to be achieved, learning

JPSD Vol. 5 No. 1, Maret 2019  
ISSN 2540-9093  
E-ISSN 2503-0558

experiences include experience to achieve competency in realm of cognitive, affective, and psychomotor. Furthermore, the learning experience is formulated with the operational verbs. (Depdiknas, 2003).

The educational process is inseparable from the learning activities in the classroom. Learning activities are largely determined by the cooperation between teachers and students. Teachers are required to be able to present the lesson with optimally. Therefore the new creativity and ideas are needed to develop ways of presentation material of learning at school. The definition of creativity is the ability of a teacher in selecting methods, approaches, and the appropriate media in presenting the learning material. According to Usman, M.B and Asnawir (2002) teaching and learning process is a process that contain a series of the teacher's actions which take place in an educational situation in achieving certain goals. In the process of teaching mathematics there is a activity that cannot be separated between teacher who teaches

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and student who learns. As revealed (Usman: 1986) that the teaching process is said to be successful if children can express what they have learned freely and trustingly in various situations in their lives.

After reviewing the learning process that has been going on and has been implemented and described above, then the problem lies at the teacher as the material presenter. The problems are as follows: Learning objectives have not been achieved because the teacher lacks mastery of the material; The tools/media that used by teacher are inappropriate or inaccurate and Students are passive because the teacher does not use a variety methods in delivering the material and the lacks of children's activeness because the activities are only teacher-centred (Rohaya: 2016).

In the pre-research it was known that the score of the ability of mathematics learning outcomes, the students with "good" category amount to 2 students with a percentage of 13,33%, the ability of students' learning outcomes with "quite good" category amounted to 6 students with a percentage of 40.00% and the ability of

JPSD Vol. 5 No. 1, Maret 2019  
ISSN 2540-9093  
E-ISSN 2503-0558

student's learning outcomes with "poor" category amounted to 7 students with a percentage of 46.67%. Overall, the average ability of students' learning outcomes in the pre-research are amounted to 53.67% with a poor category. Based on the results of pre-research learning, shows that the total of students who achieve complete level only 2 students with a percentage of 13.33% and 13 students who did not achieve complete level with a percentage of 86.67%.

Based on the pre-research learning outcomes, the results of evaluation that have not yet reached the specified Minimum Criteria of Mastery Learning (KKM), then the problem is very important to be researched, so that the competency standards of mathematics that will achieved by students will be maximally achieved. The low learning outcomes of mathematics, students will find struggles to continue the mathematics learning material in the next class, and the lazy behaviour will continue throughout learning mathematics.

Based on the phenomenon above, this research will be more focused on efforts to improve the mathematics

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learning outcomes which so far not been good enough, with this improvement effort, the researchers want to improve the understanding of mathematics material learning through active, innovative, creative, effective, and fun learning to motivate students' interest in learning.

Among the strategic steps that allow the teacher through the use of learning methods that use the teaching aids in activating children to improve the learning outcomes. To overcome the problems above, it is necessary to have improvement in mathematics learning, one of this is the use of teaching aids as a media in the learning process (Siti, R., dan Wahyu Nur. 2018). Mathematical teaching aids are a set of concrete objects that are designed, created, assembled or arranged intentionally that are used to help embed or develop concepts or principles in mathematics (Iswaji 2003:1).

According to Nasution (3993:10) props are the aids in the teaching to make more effective teaching. Another theory says that teaching aids in the teaching can be useful as follows. Laying strong foundations for thinking, so it will reduce verbalism, can enlarge the students' attention, lay the foundations are important for learning's development, so the learning will be more stable (Hamalik, 1997: 40). This is in accordance with the opinion of Hamzah (1985:11) which says that educational media are the tools that can be seen and heard to make the communication methods become more effective.

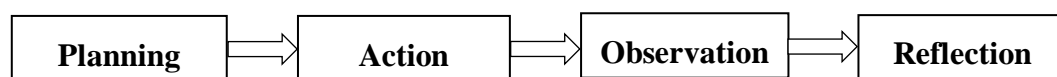
The use of teaching aids are expected to provide students' understanding, and develop intellectuals, so the students can achieve optimal learning outcomes (Ismawati.2016).

## B. Research Methods

The activities that is carried out at this stage consist of 4 stages, which is: 1) Planning the activities of this stage is: -Arrange a plan to implementing learning; -Prepare the teaching aids that will be used (in the form of learning media); -Making the students worksheets; -Prepare the answer key of Students Worksheet; -Prepare the final test of action; -Prepare the key sheet for the final test answer; -Make an observation sheet, which consist of teachers activity observation sheet, and student activity observation sheet.

2) Implementation of actions, 3) Observations, and 4) Reflection

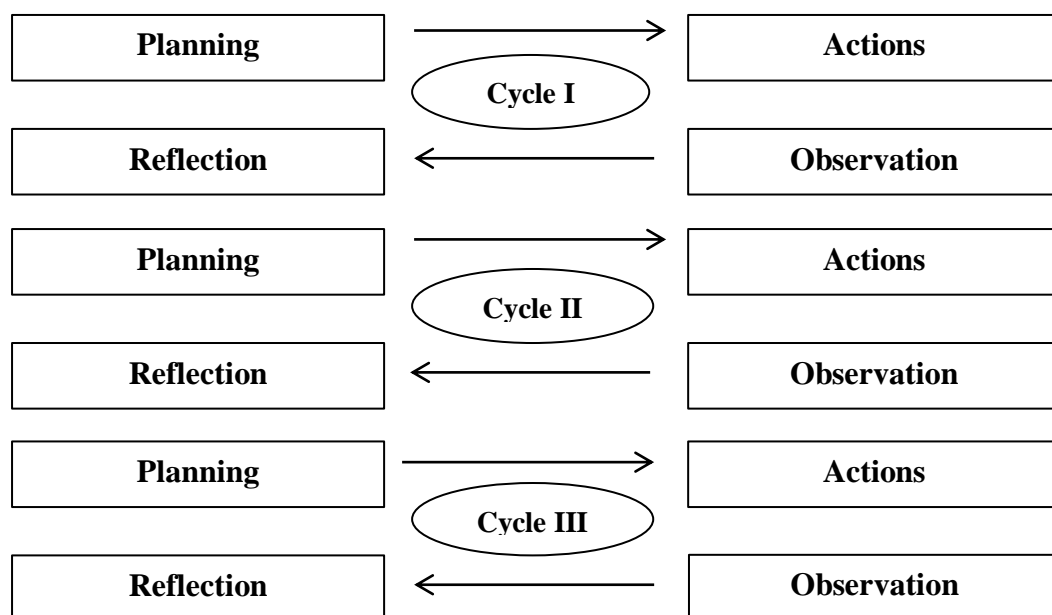
(Dahniar, Murdiana, & Sukayasa. 2013). For the category of the average score of learning outcomes using Arikunto's opinion (2000:245) which is: a. If the student scores  $\geq 66$ , then it is categorized as "good", b. If  $55 \leq$  the score of students  $< 65$ , then it is categorized as "quite good", c. If the score of students is  $< 55$ , it is "poor" category. This research is a Classroom Action Research with recycling study, which consists of four stages, there is planning, action, observation, and reflection, more clearly will be described at the picture 1 below.



**Picture 1. Classroom Action Research Flow (Aqib, 2007)**

Based on the flow above, the first thing to do is to plan the teaching and learning process, then doing learning actions, observing the actions that has on going, and the last is to reflect on the learning

outcomes so it can conduct the more mature planning. Thus the activities are continue to take place in every cycle. The research process can be described as down below.



Picture 2. Flow of Action in research (Depdiknas 2003)

### C. Research Results and Discussions

At the first meeting, the teacher explained and demonstrated about the material of identifying fractions. The teaching aids that provided by the teacher are from the original objects is bananas as the media learning about fractions. Next the teacher gives worksheet about fractions and students are assigned to do the worksheet in groups. After they done the worksheet, the students are being invited to discuss and demonstrate the results of their worksheet. Then the results of their worksheet are collected to be assessed by the teacher. At the second meeting, the teacher gave a little initial test of question and answer for 10 minutes to strengthen the students' memories about what the teacher had explained. Then the first cycle test was held with 15 students as the participates. The learning results in first cycle, the students who achieved Minimum Criteria of Mastery Learning (KKM) were just 2 students and those who had not reached Minimum Criteria of Mastery Learning (KKM) were 13 students.

**Table 1. The Data of Students Ability of Mathematics Learning Results on Cycle I**

Num	Categories	Frequencies	Percentages	Predicate	Completeness
1	65 - 100	2	13,33%	Good	Complete
2	55 - 64	1	6,67%	Quite Good	Incomplete
3	0 - 54	12	80,00%	Poor	Incomplete
Average			53,80%	Poor	Incomplete

Based on the table 1, it is known that the score of the students ability of learning outcomes with the “good” category are amounts to 2 students with a percentage of 13.33%, the students’ ability with the “quite good” category is only 1 student with a percentage of 6.67% and the ability of learning outcomes with the “poor” category are amounts to 12 students with percentage of 80.00%. Overall the average ability of students’ learning outcomes in the first cycle are amounted to 53.80% with the “poor” category.

**Table 2. The Data of Students Ability of Mathematics Learning Results on Cycle II**

Num	Categories	Frequencies	Percentages	Predicate	Completeness
1	65 - 100	10	66,67%	Good	Complete
2	55 - 64	2	13,33%	Quite Good	Incomplete
3	0 - 54	3	20,00%	Poor	Incomplete
Average			67,53	Quite Good	Complete

Based on the data in table 2, it is known that the score of the students’ ability of learning outcomes with the “good” category are amounts to 10 students with a percentage of 66.67%, the ability of students’ learning outcomes with the “quite good” category are amounted to 2 students with a percentage of 13.33%, and the ability of students’ learning outcomes with the “poor” category are amounted to 3 students with a percentage of 20.00%. Overall, the average ability of students’ learning outcomes in the second cycle are amounted to 67.53% with a “quite good” category.

**Table 3. The Data of Students Ability of Mathematics Learning Results on Cycle III**

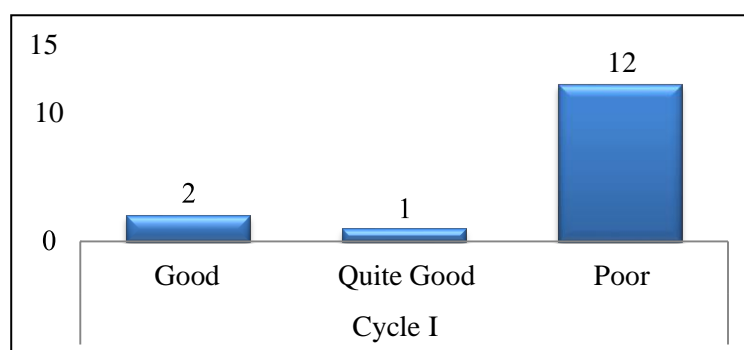
Num	Categories	Frequencies	Percentages	Predicate	Completeness
1	65 - 100	13	86,67%	Good	Complete
2	55 - 64	2	13,33%	Quite Good	Incomplete
3	0 - 54	0	0%	Poor	Incomplete
Average			77,33	Good	Complete

Based on the data in the table 3, it is known that the average score of mathematics learning outcomes is 77.33% with the “good” category, the students’ ability of learning outcomes with the “good” category are amounts to 13 students with a percentage of 86.67%, students’ learning outcomes with the “quite good” category are amounted to 2 students with the percentage of 13.33%, and the students’ ability of learning outcomes with the “poor” category were not exist.

This improvement in learning outcome was caused by the students

that start to get use to with the learning methods that applied by the teacher.

Based on the results of the third cycle of action and observations made by the teacher, it was concluded that the teacher had tried to implement learning using teaching aids in mathematics learning and using demonstration methods, and it found that there were few obstacles in the learning process. The factors and constraints that found in third cycle are: 1) There are still some students who chat with other students. 2) there are still some students who pay less attention to the teacher’s explanation.

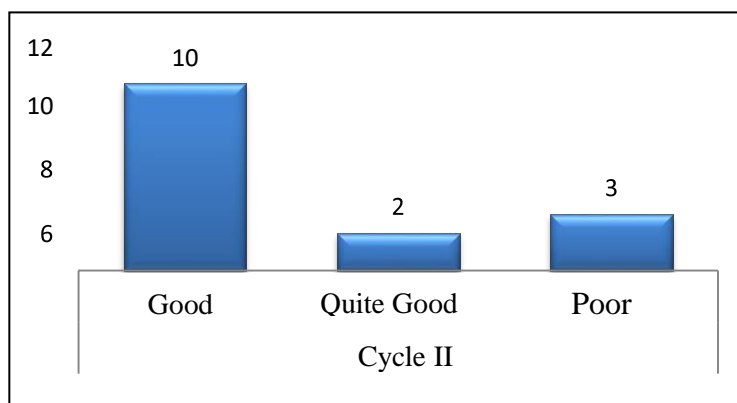


**Graph 1. Learning Results of Cycle I**



Based on the graph 1 above, it is known that the score of the students' ability of learning outcomes with the "good" category are amounts to 2 students with a percentage of 13.33%, the students' ability with the "quite good" category is only 1 student with a percentage of 6.67% and the ability of

learning outcomes with the "poor" category are amounts to 12 students with percentage of 80.00%. Overall, the average ability of students' learning outcomes in the first cycle are amounted to 53.80% with the "poor" category.



**Graph 2. Learning Results of Cycle II**

Based on the graph 2, it is known that the score of the students' ability of learning outcomes with the "good" category are amounts to 10 students with a percentage of 66.67%, the ability of students' learning outcomes with the "quite good" category are amounted to 2 students with a percentage of 13.33%, and the ability of students' learning outcomes with the "quite good" category are amounted to 3 students with a percentage of

20.00%. Overall, the average ability of students' learning outcomes in the Cycle II are amounted to 67.53% with a "quite good" category.

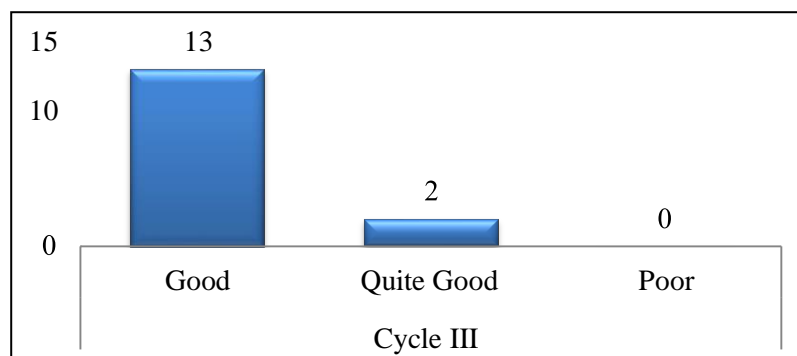
The learning Poor es on the first cycle get a "poor" category this is caused by lack of students' activity during the learning process. The students' cognitive learning outcomes can be improved by improving the quality of learning by teacher and student activities.

Learning outcomes show the learning achievement, it is an indicator of changes in student's behaviour. Learning outcomes as a sign of behaviour changes in the form of changes in knowledge.

The learning outcomes in second cycle are better than in the first cycle. This is because the actions that are taken, *inter alia*, giving direction to

students in term of good communication between study group in discussion.

In addition of learning outcomes, students activities in second cycle are better than in the first cycle. Student activities are include, collaborating, asking questions, expressing opinions, and taking conclusions can be more activated.



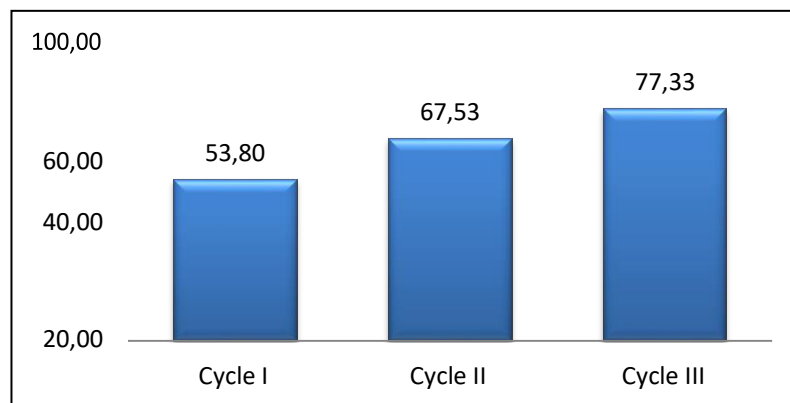
**Graph 3. Learning Results of Cycle III**

Based on the graph 3 above, it is known that the average score of mathematics learning outcomes is 77.33% with the “good” category, the students’ ability of learning outcomes with the “good” category are amounts to 13 students with a percentage of 86.67%, students’ learning outcomes with the “quite good” category are amounted to 2 students with the percentage of 13.33%, and the students’ ability of learning outcomes with the “poor” category were not

exist. This improvement in learning outcome was caused by the students that start to get use to with the learning methods that applied by the teacher. In the third cycle, the learning process went well. The students begin to get used to the application of learning using teaching aids that performed by teacher. Learning outcomes of the students in the third cycle get a “good” category. The students that inactive, become active. But there are still some findings in the third cycle, that there

are still some students who chat with other students, and some students are

still pay less attention to the teacher's explanation.



**Graph 4. The Average Score of Explaining Fractions and Sequences in Cycle I, II, and III in Mathematics Learning**

Based on the results of the average students' score to explaining fractions and its order with the original teaching aids has increased. On the cycle I 53.80%, cycle II 67.53, cycle III 77.33.

Based on the data that obtained in the second cycle, there was an increase and achievement of sufficient indicators and students who achieve scores above the Minimum Criteria of Mastery Learning (KKM) were 10 students. In the third cycle, there was an increase and achievement of indicators that were quite high and students who achieved scores above Minimum Criteria of Mastery Learning (KKM) were 10 students, so there was no need to hold a fourth cycle and the research was stopped.

For further mathematics learning, the teacher can use original teaching aids, because the tools can increase the score of the average learning outcomes in mathematics subjects in 5th grade students of SDN 18/V Kuala Indah, West Tanjung Jabung District.

Based on the results of the graph data above, it can be concluded that almost all of students like realistic mathematical learning. Students consider that learning mathematics through a realistic approach are very enjoyable. Finally the learning process can goes well and students are able to associate the mathematical concepts in everyday life. Thus, the mathematics learning also become meaningful to them. (Mashudi, 2016).

The learning explains the fractions and the order in mathematics learning at the 5th grade of SDN 18/V Kuala Indah, West Tanjung Jabung District using the original teaching aids. These aids was chosen by researchers because it can overcome the students difficulties when explaining about fractions and its sequences. After the researcher conducted a Classroom Action Research procedure, which began from planning, action, observation, and reflection, the application of original teaching aids can improve the learning outcomes of Mathematics, especially the basic competencies to explain about fractions and its sequences. This can be seen from the results of implementing actions in each cycle. The application of original teaching aids in the process of learning Mathematics can improve the students' skills in explaining fractions and its sequence. This can help to improve the students' learning outcomes. The original teaching aids can motivate students to work in groups and motivate students to explain the fractions and sequences, because mathematics can make students become confidents and skilled in explaining and sorting fractions. (Ngatiman, 2012).

#### **D. Conclusions**

Based on the results of the research and discussions, it can be concluded that the application of original teaching aids in mathematics learning can increase the average score of students' learning outcomes in each cycle. In the first cycle, the students' learning outcomes are 53.80 with the "quite good" category, in the second cycle, the students' learning outcomes are 67.53 with the "good" category, and in the third cycle, the students' learning outcomes reached 77.33 with the "good" category.

Based on the findings and the results of classroom action research in 5<sup>th</sup> grade students of SDN 18/V Kuala Indah, West Tanjung Jabung District, can be concluded as follows..

a) The application of the original

teaching aids can improve students' mathematics learning outcomes in the subject of fractions and its sequences. The learning process explains the fractions and its sequences in each cycle that applies the original teaching aids and guided by researchers and collaborators.

- b) The results of the research in the first cycle, the score of students' mathematics learning outcomes with the average of 53.80 and students who achieved the Minimum Criteria of Mastery Learning (KKM) are 2 students (13.33%). In second cycle, the average score of students' learning outcomes reached 67.53 or increased by 54.00%, and the students who achieved Minimum Criteria of Mastery Learning (KKM) are 10 students (66.67%) or increased by 8 students. In the third cycle, the average score of students' learning outcomes reached 77.33 or increased by 20.00%, or increased by 9.80, and

the students who achieved the Minimum Criteria of Mastery Learning (KKM) are 13 students (86.67%) or increased by 3 students.

- c) The average score of students' learning outcomes are 53.80 and the students who reached the Minimum Criteria of Mastery Learning (KKM) are 2 students in the first cycle, compared with the second cycle of the average score of learning outcomes are 67.53. In this class action research, it seems like there is a sufficient improvement, whereas the improvement in the average score of students' learning outcomes from cycle I to cycle II are 13.73, and students who reached the Minimum Criteria of Mastery Learning (KKM) are 10 students. The improvement of learning outcomes in cycle II to cycle III was 9.80, and students who achieved the Minimum Criteria of Mastery Learning (KKM) are 13 students.

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