Learning from Picture and Picture Action Research: Enhancement of Counting Ability on Division of Numbers for Primary School Students

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Abstract. Many primary students have difficulty understanding math lessons, especially the division of numbers in the form of stories. The purpose of this study is to increase the ability of counting the division of numbers in story problems using the picture and picture model on the second grade Madrasah Ibtidaiyah Darun Najah Kajeksan, Indonesia. This research used the picture and picture model classroom action research method with Kurt Lewin model approach through two cycles and consisting of four main steps for each cycle: planning, acting, observing, and reflecting. Data were gathered by observation, interview, test, and documentation. Data analysis was performed using learning mastery individually and classically. The results of this study showed that implementation of picture and picture learning model which is equipped with two or three dimensional drawing media on Mathematics subject about division of numbers in story form can improve student learning score up to 84.62% of second grade Madrasah Ibtidaiyah Darun Najah Kajeksan, Sidoarjo, Indonesia and can help the achievement of learning process criteria between teachers and students classified as “good”.

1. Introduction

Many primary students have difficulty understanding the math lessons delivered by teachers. Counting is considered a difficult subject to understand, without purpose and usefulness. Students often experience a sense of boredom, confusion and saturation whenever given a numeracy lesson (1). Mathematics is an elusive lesson that can lead to low student scores. One of the most complex problems in mathematics is the division of numbers in the form of stories. Students need certainly to understand what is known and what is asked to have the ability to answer. Operation division is the most difficult operation understood elementary school children, especially children having trouble learning math. Educators require to try to help them be skilled in carrying out the division. Some of the factors that affect the learning difficulties of sharing for them are, among others, caused by not
having the knowledge or skills of prerequisites and often counting from left to right, whereas all four basic operations are all started from the right.

Counting is a matter related to calculations mainly concerning addition, subtraction, multiplication, and division. Counting not only in written language or imitating teacher greeting quickly, but counting is the cooperation of some individual skills in observing, mentioning, understanding, and writing symbols of definite numbers and in accordance with information (2). Each child has different abilities to solve problems of arithmetic. Because it requires practice in creative critical thinking, as well as alternatives. Fenname explains there are three variables that influence one's success in solving the math story problem, namely the ability to understand the problem, the ability to plan completion in the ability to count. There are three steps that are the sequence of students in solving the mathematical story problem, namely: 1) identifying problems, 2) determining what is known and asked, 3) making a plan of completion of what is known (3).

Efforts to improve students' numeracy skills not only ran on worksheet, and taught by using lecture methods, memorized the form of multiplication / division without using the learning model. Thus, learners are still less understanding of the matter-shaped story on the subject of mathematics. This results in a low math score. Examples of problems facing Mathematics is the second grader Madrasah Ibtidaiyah Islamic Primary School Darun Najah Kajeksan, Sidoarjo, Indonesia.

The learning model is the design or pattern used in preparing the curriculum, the learning activities, organizing the taught material, and giving instruction to the teacher in the teaching setting. Learning mathematics model needs to be sorted and developed in accordance with the purpose and characteristics. In addition, the chosen learning model should focus on the needs of the child and not to facilitate the teaching teacher. Mathematics learning model not only facilitate the teacher, but also know about the needs of children, so that children can be interested and the spirit of learning and able to count in being able to achieve the competence of learning effectively and efficiently (4).

One of the models that can be applied by teachers in the learning process to improve students' thinking skills is the picture and picture model. Picture and picture learning model relies on images as a medium in the learning process, so students can remember what has been conveyed by the teacher through pictures (5). Picture and Picture is a learning model that uses images as learning media. This model is similar to Example Non Example, where images given to students must be paired or sorted logically. These images became the main tool in the learning process (6). Stages in Picture and Picture are: 1) delivery of competence, 2) presentation of material, 3) presentation of picture, 4) image installation, 5) assessment, 6) presentation of competence, and 7) cover. Visualization is taken to incorporate operations of constructing and transforming equally visual emotional imagery and all the inscriptions of spatial character that could be implicated in performing mathematics (7).

Implementation a model of picture and picture learning can improve the numeracy skills of second grade students of Public Primary Schools Bringin 02 Semarang. Based on the results of pre test and post test that there is a growth in the amount of students after the implementation of learning model picture and picture to 2nd grade students Public Primary Schools Bringin 02 Semarang (8).

Required improvement efforts, curriculum development, and the quality of education and skills in teaching and learning activities gradually and continuously. The purpose of this study is to increase the ability of counting the division of numbers in story problems using the picture and picture model on the 2nd grade Madrasah Ibtidaiyah Darun Najah Kajeksan, Sidoarjo, Indonesia. Students are expected to easily understand the teaching of mathematics provided by the teacher with the help of picture and picture learning model.

2. Research Methods

This research used the picture and picture model classroom action research method with Kurt Lewin model approach through two cycles and consisting of four main steps for each cycle: planning, acting, observing, and reflecting. The population in this study is 2nd grade Madrasah Ibtidaiyah Darun Najah Kajeksan, Sidoarjo, Indonesia Year 2017 / 2018. Primary data were obtained from 13 students consisting of 8 men and 5 women during January until May 2018. The research
variables used were variable (X) application of picture and picture model as independent variable; and variable (Y) students counting ability as dependent variable. Data were gathered by observation, interview, test, and documentation. Data analysis was performed using learning mastery individually and classically with equation 1, using \( LM = \frac{NS}{N} \times 100\% \)

\[ \text{LM} = \frac{\text{NS}}{\text{N}} \times 100\% \quad (1) \]

Students are categorized to achieve mastery when reaching the Minimum Learning Mastery Standard (MLMS) determined \( \geq 75 \). Classical mastery formula teacher success indicator if complete student achieves 85% of the total number of students in one class gets the value \( \geq 75 \). Sudijono (2010) explains that how to analyze data classroom action research using equation 2, ie \( P = \frac{\text{percentage}}{\text{number}} \) frequency being searched percentage, and \( N = \text{number of frequencies or number of individuals} \).

\[ P = \frac{100\%}{\text{number}} \quad (2) \]

Table 1. criteria of student and teacher learning process contains five categories to see the success rate of students and teachers in implementing the learning process (10).

| No. | Level of success | Predicate of Success |
|-----|------------------|----------------------|
| 1   | 86-100 %         | Very well            |
| 2   | 71-85 %          | Good                 |
| 3   | 56-70 %          | Enough               |
| 4   | 41-55 %          | Less                 |
| 5   | < 40 %           | Very Less            |
| 6   | Range 15 %       |                      |

3. Result

In this section will explained about enhancement of counting ability on division of numbers for primary school students with picture and picture action research.

3.1. Description of Pre-Cycle Results

Based on the observation of the students on the initial conditions before implementing the picture and picture method, it shows that students' mathematics learning score are still low based on Minimum Learning Mastery Standard (MLMS). Students who achieve mastery amount to 5 students with Learning Mastery (LM) result is 38%. Meanwhile, students who have not achieved mastery of 8 students with LM result is 61.53%. The results of the data above shows there are still many students who have not reached MLMS. The score of MLMS in 2\textsuperscript{nd} grade of Madrasah Ibtidaiyah Darun Najah Kajeksan on the subject of mathematics is 75.

3.2. Description of Cycle I Research Result

Researchers in cycle I apply the model of learning picture and picture by using the media images on paper stuck on the board. This is intended to attract attention and engage the students' brains by associating counting learning materials in the form of division of numbers in story problems through the image media. The data of cycle I shows that the students' math score is increasing. Students who achieve mastery amounted to 6 students or 46.15% and students who still not mastery 7 students or 53.84%.

3.3. Description of Cycle II Research Result

Researchers in this second cycle besides maximizing the implementation of the learning model picture and picture by using the picture drawing media with two or three dimensional images, the researcher also tried to improve the weakness in the previous cycle by more interactive and stimulate the students to be actively involved and responsive during the learning. The data of cycle II score
shows that the student's score is increasing compared to pre-cycle and cycle I. Students who mastery amount to 11 students or 84.62% and students who still not mastery 2 students or 15.38%.

4. Discussions
The results of the Pre-cycle, cycle I and cycle II shows the data of the overall learning result value as shown in the Table 2. increasing number of students who achieve MLMS per cycle. Students' mathematics learning outcomes are low in pre-cycles allegedly because the learning process tends to only memorize the multiplication and division forms. Students have not been taught how to understand and complete the division of numbers in the story matter. Thus, causing students less enthusiastic and understand in solving math problems. In Cycle I, the implementation of picture and picture methods increases the number of mastery students. This shows that the goals and expectations of learning have been achieved and fulfilled. In Cycle 2, this learning result has met the ideal LM standard because it has reached LM value 84.62% and good predicate on criteria of student and teacher learning process. The existence of 2 students who have not mastery allegedly because the students are less motivated to learn, attention to learning, active at the time of learning took place, and read fluently.

Table 2. Increasing Number of Students Who Achieve MLMS Per Cycle

| Description | Mastery Students | Not Mastery Students |
|-------------|------------------|----------------------|
|             | Frequency | %       | Frequency | %       |
| Pre-Cycle   | 5        | 38%     | 8         | 61.53%  |
| Cycle I     | 6        | 46.15%  | 7         | 53.84%  |
| Cycle II    | 11       | 84.62%  | 2         | 15.38%  |

Data Table 2. increasing number of students the achievement of MLMS per cycle above shows a significant increase of student learning mathematic score in each phase. Pre-Cycles to Cycle I happened to increase students who mastery which is 6 students or 46.15%. The results showed that students get a significant increase in score that is 84.62% with mastery students is 11 people from cycle I to cycle II. Students' learning score are influenced because students are more motivated to understand the subjects of Mathematics by using the use of picture and picture learning model which is equipped with a picture drawing media with two or three dimensional images. Thus, students are increasingly interested and enthusiastic to try to finish learning, especially about the division of numbers. The other factors that influence the success rate of students is the factor of talent, interest, intelligence level, learning characteristics of children, and methods used by teachers in learning.

5. Conclusion
We can learn that implementation of picture and picture learning model which is equipped with two or three dimensional drawing media on Mathematics subject about division of numbers in story form can improve student learning score of second grade Madrasah Ibtidaiyah Darun Najah Kajeksan, Sidoarjo, Indonesia. This can be proved by the increase of score from pre-cycle, cycle I to cycle II. In the first cycle students who mastery according to MLMS as many as 6 students or 46.15%. Then, in cycle II students who mastery as many as 11 students or 84.62% = 84%. These results also show that the implementation of the model of learning picture and picture can help the achievement of learning process criteria between teachers and students classified as "good".

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