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Increased Triangular and Quadrilateral Mathematics Learning Outcomes of Class IV Students Through Learning Cycle Learning Models in 200503 Public Elementary Schools

Ali Rachmad Hasibuan [a, 1]
[a] Mathematics Education Department, Universitas Negeri Medan, Indonesia
[1] alihasb22@gmail.com

Abstract
This study aims to Improve Student Learning Outcomes in Triangular Material and Quadrilateral Class IV 200503 Public Elementary School Education with 30 students. The findings of this study are as follows: (1) The average value of students' mathematics learning in Triangular and Quadrilateral material before the Learning Learning Cycle model is applied in Class IV 200503 Public Elementary School Education is 30%. Based on the average value, it can be said that the student learning outcomes before the application of the Learning Cycle learning model in class IV SD Negeri 200503 Pijorkoling is relatively low. After the Learning Cycle learning model was applied in the material Triangle and Quadrilateral, the percentage value of student learning completeness is 60% at the end of the cycle I. At the end of the second cycle the average class value with the percentage of student mastery 93.33%, (2) Application of learning models Learning Cycle on Triangle and Quadrilateral methods can attract students' attention, (3) there is an increase in student learning outcomes after the application of Learning Cycle learning models in Triangle and Quadrangular material in class IV 200503 Public Elementary School, therefore learning Learning Cycle models can improve learning outcomes Specifically Mathematics in Triangle and Quadrilateral Material of students in Class IV SD Negeri 200503 Education.

Keywords
Learning Cycle Models; Student Learning Outcomes

INTRODUCTION

The development of science and technology (science and technology) has a very large influence on the order of human life both individually and collectively. one of which needs to be developed is education. Learning is an effort to create a climate and service for the abilities, potentials, interests, talents, and needs of diverse students so that optimal interactions between teachers and students occur, and between students and students In the teaching and learning process in the classroom there is good relationship between teacher and student so that there are a good teaching and learning process. One of them is by improving the way of teaching in the

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classroom. Because, in the teaching and learning process, a learning model needs to be needed so that students do not feel bored and more creative in solving problems, both oral and written in the form of questions given.

Mathematics is a lesson that every student considers that material in mathematics is difficult to understand. Good understanding according to mathematical concepts, and mathematical rules in problem-solving. The students 'difficulties in understanding the material taught can be seen from the lack of students' initial understanding of the subject matter explained and student learning outcomes that are still low. The average student exam results are still below the KKM. In this case, many teachers who still teach more use the lecture method. In this case, the use of media and experience can lift motivation and increase the absorption of student knowledge. In the elementary school 200503, Pijorkoling Elementary School still needs a variety of ways to deliver material using a learning model so that it can support students' ability to absorb mathematics so that the results and KKM completeness in the learning process can be exceeded well. Waking up flat is one of the material in the field of Geometry (Flat Build) which consists of Triangles and rectangles. This material was often found in everyday life. So, to improve students' understanding, researchers use the Learning Cycle learning model. Learning Cycle is one learning model that is intended for learning cyclically and gradually. Students are told to make a group and teacher as a facilitator and generate interest in the students to be more readily understood and dare to convey the results of the discussion to other friends. So, with this model, students are expected to be able to improve understanding, especially Triangle and Quadrilateral.

Based on the results of the description above, the title chosen in this study was “Improvement of Triangular and Quadrilateral Mathematics Learning Outcomes of Class IV Students Through Learning Cycle Learning Models in 200503 Public Elementary School Education”.

Learning is a business, which means that actions are taken seriously, systematically, by utilizing all the potential possessed, both physically and mentally. Learning is a process or activity and not merely a result or goal. Learning is not only remembering but broader than that, namely experiencing. Morgan argues that

learning is any change that is relatively settled in behavior that occurs as a result of practice or experience. Learning outcomes are abilities acquired by children after going through learning activities. Learning is a process of someone trying to obtain a form of behavior change that is relatively settled. In programmed and controlled learning activities called learning exercises or learning activities or instructional activities, the learning objectives are predetermined by the teacher. In student learning outcomes can produce instructional goals. The characteristics of learning activities are delivering behavioral changes through business. However, not all changes that occur from themselves as a change in the meaning of learning. Learning is done to try to change behavior in individuals who study. Changes in behavior are the acquisition of learning outcomes. Hamalik said, “Learning outcomes are the occurrence of changes in behavior in students who can be observed and measured in the form of changes in knowledge, attitudes, and skills”.

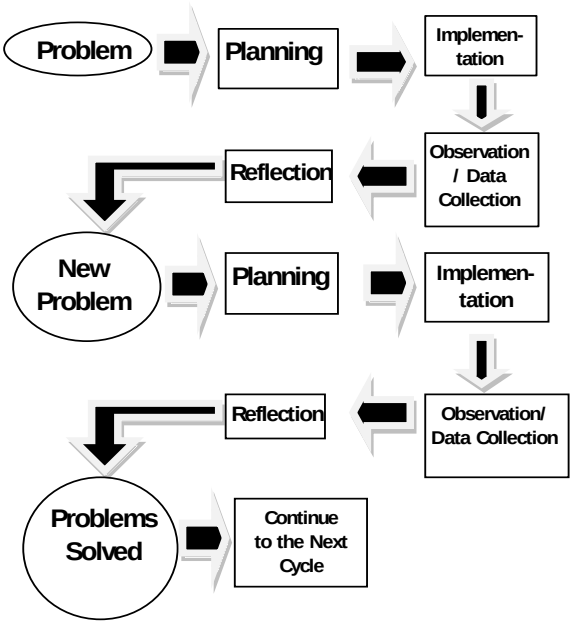
Learning is the development of new knowledge, skills, or attitudes when individuals interact with information and the environment. According to Hamalik in his book learning is a combination which includes human, material, equipment, and procedures that influence learning objectives. According to H.W Fowler in Pandoyo Mathematics is an abstract subject, so it requires the ability of teachers to be able to pursue the right method according to the level of mental development of students. In this case, mathematics learning by researchers with the Learning Cycle Learning Model can provide opportunities for students to be more guided in understanding, attitudes, and skills in discussing questions about Triangle and Quadrilateral.

Cycle learning is one of the learning models with constructive models. The cycle learning model was first introduced by Robert Karp plus in the Science Curriculum improvement study/SCIS (Trowbridge & Bybee, 1996). The learning cycle is one of the learning models with constructivism which initially consists of three stages, namely:

a. Exploration.
b. Recognition of concepts (concept introduction).
c. Application of concepts (concept application).

In the next process, the three stages of the cycle undergo development. The three

cycles are currently developed into five steps (Lorsbach, 2002) which consist of stages; a. Generation of interest (engagement). b. Exploration. c. Explanation (explanation). d. Elaboration. e. Evaluation (evaluation) In this case interest and talent are the initial stages of the learning cycle. Because the teacher tries to arouse and develop his interest and curiosity in accepting the learning topics that the teacher wants to convey. a. Exploration is the second stage of the learning cycle model. At the exploration stage, small groups are formed between 2-4 students, then allowed to work together in small groups without direct learning from the teacher. In this group, students are encouraged to test understanding of the material given. The teacher here is a facilitator and motivator. On the part of seeing the knowledge students have about the material whether it is correct, it is still wrong, or may be partially wrong in part. b. The explanation, in this case, is done by the teacher encouraging students to be able to deliver the material that has been discussed and the teacher guides students to explain in their own words. c. Elaboration, namely the teacher facilitates students with concepts and students carry out the concepts that have been given by the teacher. d. Evaluation is the level at which the teacher observes and guides students to evaluate their work and students assess the results of the discussion that has been described and draw conclusions and analyze the results of the debate.



THEORETICAL PERSPECTIVES

This research will be carried out in the fourth grade of SD Negeri 200503 in the Padangsidimpuan.

The subjects in this study were all students in grade IV of the 200503 Public Elementary School in Padang, Padang, which numbered 30 people. The object of this study is the Effort to Increase Learning Outcomes of Class IV Students Through

Learning Cycle Learning Models at the 200503 Public Elementary School in Padangsidimpuan.

The type of this research is Class Action Research. Where this study seeks to explain the application of Learning Cycle Learning Model as an effort to improve students' mathematics learning outcomes in the subject of Build Square equilibrium, in accordance with the type of research conducted by researchers, this study has stages of research in the form of a cycle carried out with the changes to be achieved.

Some experts put forward the steps of action research with different charts, but Arikunto stated that “Broadly speaking four stages are commonly passed, namely (1) planning, (2) implementation, (3) observation, (4) reflection”.

The stages in this study will be explained as follows:

Action Planning Phase

a. Make initial observations.
b. Identify the factors of teacher barriers and ease in previous mathematics learning.
c. Make a learning plan using the Learning Cycle Learning Model.

Stage of Action Implementation

After the planning stage is well arranged, then the next action is carried out, the implementation of the work is given by carrying out activities where the researcher acts as a teacher, these actions are:

a. Doing apperception and motivation to direct student learning activities.
b. Deliver the learning objectives to be achieved.
c. Explain the material. Build flat rectangles by giving several examples relating to daily life.
d. Give examples of using Learning Cycle Learning Models.
e. Allow students to ask questions and summarize.
f. Ask students to clarify what they do not know then present, then predict.
g. The teacher and students make conclusions or summaries of the material presented.
h. Give a quiz or evaluation.

Observation Phase

a. The situation of teaching and learning activities.
b. Students' ability to understand the material.
c. Students' actions in the learning process.

Reflection Phase

This stage is done to analyze and give meaning to the obtained data. All data collected, analyzed, and concluded that in the first cycle there were several difficulties experienced by students so that there should be improvements in the second cycle. The results of this reflection were used as the basis for the planning phase in the next cycle.

In this action research, the researcher is the main actor. Action planning based on existing problems in the class and the results of monitoring the teacher, selecting the possibility of solving the problem. This action research process is carried out in a series of cycles, and each cycle will be carried out by the changes to be achieved.

In determining the learning outcome test, the teacher evaluates student answers and classifies students based on mastery level with the formula:

$$MCC = S\_S / S\_M \times 100\%$$

Note:

PKS: Percentage of Student Completeness

SS: Number of scores obtained by students

SM: Maximum score

$$PKK = M / N \times 100\%$$

Note:

PKK: Percentage of Classical completeness

M: Number of students with PPH ≥ 65%

N: Number of students

Criteria:

1. 0% ≤ PPH <65%. Students have not finished learning.
2. 65% ≤ PPH ≤ 100%. Students have finished learning.
3. PKK ≥ 85%. Classes are complete in learning.

So a student is said to have completed learning if he has achieved a minimum score of 65% and a class is said to be thoroughly studied if the class has 85% of students who achieve a score of ≥ 65%.

Data collection for Classroom Action Research (CAR) was conducted at SD Negeri 200503 Job training with sample classes was in class IV. Data retrieval is used in 2 cycles, namely, cycle I and cycle II.

Based on the first cycle test conducted on 30 students as respondents, it is known that the results of the test I mathematics subjects in the subject matter of Triangle and Quadrilateral are not as expected, this is indicated by the still many students who obtain the below standard values (<65%).

CONTEXT: FINDINGS AND DISCUSSION

In general, the level of student mastery about the material of Triangle and Quadrilateral in the first cycle is still not satisfactory, with the amount. Data obtained from 18 of 30 students (60%) had achieved mastery learning (score ≥65) while 12 other students (40%) had not yet completed. From the results of the cycle, The highest value of student learning outcomes in the subject matter of Triangle and Quadrilateral in the first cycle is 80, and the lowest value is 50.

The description of the Cycle I test results above indicates that learning activities using the Learning Cycle Learning Model in the subject matter of Triangle and Quadrilateral are still not optimal. Although there has been an increase, where the classical level of the individual (individual) obtained in the first cycle is 33.33%, it is not sufficient for classical completeness requirements of (85%). However, the increase starts from Pretest with a percentage of 33.33%. To proceed to cycle II where the results of this test are used to overcome student learning difficulties so that they can improve students' mathematics learning outcomes.

It can be seen from the table of observations of student learning activities in the second cycle which still involved as many as 30 students, and it was observed that in general students began to seriously pay attention and listen to instructions given by teachers and teachers more in terms of mastery of classes and Learning Cycle Learning Models.

Furthermore, aspects of mathematics learning outcomes in the subject matter of Triangle and Quadrilateral also increase. In general, it can be seen that the mathematics learning outcomes of students in the subject matter of the quadrilateral are high, with a total of 28 students (93.33%) who have met the learning completeness criteria and only two students (6.67%) who have not yet completed. This can be seen in appendix 28. A total of 15 students who complete learning obtain a score of 80-100.

Regarding students who complete learning increase 60% to 93.33%, then Triangle and Quadrilateral learning using Learning Cycle Learning Model is stated to have reached the target so that it is not being proceeded.

The increase in student learning outcomes is due to the teacher using the Learning Cycle Learning Model with a

conducive atmosphere and giving students excitement in learning. Judging from the classical learning completeness in cycle I and cycle II, the following data were obtained:

Table. 1 Improving student learning outcomes.

No	Test Result	Initial Data	Cycle I	Cycle II
1	Highest Grade	50	70	100
2	Lowest Grade	20	40	60
3	Classical Completeness	30%	60%	93.33%

Research Findings

Based on the results and discussion of this study, then this study found the following things:

1. Difficulties faced by students, among others:
   a. Some students (groups) do not understand the commands given by the teacher.
   b. There is still a lack of compact collaboration in group work.
   c. Students are still shy about delivering income and asking the teacher and group friends.
2. In the first cycle and silks II
   a. Cycle I
      i. Submission of material by the teacher (researcher) is by the teaching plan that has been made has mastered the subject matter, but the teacher still does not maximize the Learning Cycle Learning Model to the fullest.
      ii. Still lacking in motivating students in learning activities
   b. Cycle II
      i. Submission of material by the teacher is by the teaching plan that has been made. This teacher has mastered the subject matter. However, the teacher still does not maximize the Learning Cycle Learning Model to the full.
      ii. Still lacking in motivating students in learning activities

Discussion of Research Results

In the pre-action stage (through tests), the researcher gives the initial analysis before using the Learning Cycle learning model in solving questions in Triangle and Quadrilateral material. Based on the initial tests conducted before applying the Learning Cycle learning model, the student learning outcomes are still low. This can be seen in the level of student completeness as many as ten people (30%) from

30students. In conducting pre-action, there are still many factors that influence student learning outcomes.

According to Muhibbin Shah, three factors influence student learning, namely:

1. Internal factors (factors from students), namely the condition/physical and spiritual condition of students.
2. External factors (factors from outside students), namely the environmental conditions around students.
3. Elements of learning approach (approach to learning), namely the type of student learning skills that include strategies and methods used by students to conduct learning activities of subject matter.

The application of the Learning Cycle Learning Model is carried out to improve student learning outcomes and introduce learning models that motivate students to learn. In Cycle I there was an increase. In pre-completeness measures classically only 18 people (60%) out of 30 students. In the first cycle 18 students completed (60%) out of 30 people. Increases occur due to researchers doing business with learning models that emphasize students to prefer the material to be delivered. Although the rise occurred, the researcher still received teacher input by conducting interviews with the teacher. One interview shows that the form teacher still wants to be more attentive to discuss the student's problem. It is needed to encourage further and maximize learning outcomes. By looking at the results of observations of students who are still less interested in learning, therefore we try to motivate and generate students' interest in their curiosity with material to be conveyed. Improvements are made so that student learning outcomes increase optimally. Then the action is taken into cycle II.

The second cycle is made from the development of the first cycle where the material delivered is a material that is poorly understood by students. In the second attempt, 28 students completed the test (93.33%), and only two students did not complete the test (6.67%). Classically it has been fulfilled as targeted at 85%. There was a good improvement; the increase occurred because researchers conducted proper supervision of students during discussions, then researchers gave motivation to students to encourage students to be more happy to learn mathematics especially learning triangles and quadrilaterals.

Based on the results of learning tests and observations made on student learning

activities in the first cycle and second cycle results obtained that the application of Learning Cycle learning models can improve learning outcomes in material Triangle and Quadrilateral. Learning Cycle learning models make students active in effective learning and can improve student learning outcomes. After the Learning Cycle learning model that was sitting still and just listening to the lecture method from the teacher to be active and enthusiastic in participating in learning.

This is in line with the research conducted by Fajaroh, F and Dasna I.W. 2008. Application of Learning Model 5E Learning Cycle Cycle (LC 5E) education and learning journals) can improve student mathematics learning outcomes.

After doing the learning action by applying the Learning Cycle Learning Model, namely Cycle I and Cycle II, it was found that the completeness of student learning outcomes increased by 33.33%. So, through the application of Learning Cycle Learning Models in learning activities can improve student learning outcomes.

CONCLUSION

Based on the results of the research presented in Chapter IV conclusions can be drawn, namely:

First, the average mathematics learning outcomes of students before using the Learning Cycle learning model have a percentage of completeness of 30% after the implementation of the first cycle with the application of a Learning Cycle learning model with classical learning completeness as much as 60%. Then in the second cycle, the ability of students continues to increase with the average value of students being with classical learning completeness of 93.33%. Based on classical learning completeness criteria, this learning has reached the target of classical learning completeness.

Second, the application of the Learning Cycle learning model is carried out by mathematics teachers by arousing the interest and motivation of students to be interested in learning the material to be delivered. Then the teacher distributes groups of 6-7 people in one group. Then the teacher gives students the freedom to discuss. When the discussion the teacher pays attention to students so conducive. After the debate was over, the teacher appointed one of the groups to read the results of the discussion they had discussed. Other groups listen and give input related to the material presented. The teacher guides and summarizes all the

results of the group discussion. The teacher gives a test to see the extent to which students' ability to understand the material had been studied individually.

RECOMMENDATION

Based on the conclusions and discussion of the results of the study, we proposed research suggestions as follows:

1. For teachers, especially those who teach mathematics in grade IV to apply the Learning Cycle learning model, one alternative is to improve student learning outcomes on mathematics subjects. Besides, those students are increasingly motivated to learn because the learning process requires students to be active.
2. A teacher must be able to manage to learn by involving students in ongoing learning activities.
3. Teachers should be able to control time so that learning is following what was planned.
4. For students, often discussing or learning groups with the aim of complementarity during the teaching and learning process.

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