

CONTEXTUAL TEACHING AND LEARNING APPROACH TO IMPROVE ACTIVITIES AND STUDENT LEARNING RESULTS IN MATH LEARNING OF ANGLE MATERIAL IN 4TH GRADE AT SDN 104 LANGENSARI-SENANGGALIH KECAMATAN COBLONG BANDUNG CITY

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ABSTRACT

This research is motivated by the condition of students in elementary schools studied, namely the low student learning outcomes and the lack of student activity in participating in learning. The results of observations made before the study showed that students could not apply the concept in solving everyday mathematical problems. Besides that, learning is often independent of real life contexts.

Based on the above, the researcher tried to apply the Contextual Teaching and Learning approach in angular learning. This research was carried out aimed at knowing the description of student learning activities and how student learning outcomes in learning the concept of angles through the Contextual Teaching and Learning approach. This classroom action research consists of three cycles. Each cycle consists of one learning action. Every action is carried out starting from planning, action, observation and interview, action analysis and reflection. The object of the study was students at 4th grade in SDN 104 Langensari-Senanggalih Kecamatan Coblong Bandung City. The average scores of student activity in each cycle is: cycle I reached 73.2; cycle II reaches 76.6; and cycle III reaches 81.3. These results show that student activities during learning is increasing so that in the final action, learning activities more dominated by students. While the average scores of student learning outcomes in each cycle is: cycle I reached 68.4; cycle II reaches 73.3; and cycle III reaches 76.8. These results show that students have understood the concept of angles and have the ability to apply concepts in solving problems in daily live. Therefore can be concluded that Contextual Teaching and Learning approach in angle learning can improve student learning outcomes.

Keywords: Contextual Teaching and Learning, Math, Angle.

INTRODUCTION

Mathematics is a very important subject in the education system throughout the world. Mathematics is important to be mastered so that students can easily learn other material, because essentially mathematics is the queen of science. Besides that mathematics is important to be used as a hold because mathematics is the basic science of the development of science and technology that is useful in social life.

General objectives are given mathematics at the primary and secondary education levels, namely:

(1) Preparing students to be able to deal with changes in the conditions in life and in the world that are always evolving, through practice based on logical, rational, critical, careful, honest, effective and efficient thinking; and (2) preparing students to use mathematics and the mindset of mathematics in everyday life, and in learning various sciences. (Suherman, 2001: 56)

Geometry is one of the important branches of mathematics to be taught in elementary school. The subject of angle is part of geometry. In learning, students often experience difficulties. Difficulties experienced by elementary school students are objects that are studied in the form of abstract objects, meaning they cannot be held, touched directly by the senses but can only be thought of so that they are difficult to understand. This is what causes student achievement in elementary schools to be low.

The success of students in learning is also determined by the teacher itself. The teacher must be able to master the subject matter and convey the material well. In carrying out the teaching and learning process, teachers should be smart in determining learning theory, methods, and approaches that are appropriate to the subject matter and in accordance with the characteristics and needs of elementary school children, so that a pleasant learning atmosphere will be created. Thus can help understanding the material well by students.

Based on the observations, the researchers found that one of the factors that caused the fourth grade students at SDN 104 Langensari - Senanggalih had difficulty understanding and learning a material, especially angular material, because in learning students were used to giving examples and exercises without any other variations. Students are not accustomed to constructing their own knowledge in understanding and learning a material. In addition, in learning, the teacher is only oriented towards the mastery of the material without thinking about whether the student really understands the material angle. Learning that is only mastery-oriented material causes students to only be able to remember short-term knowledge, so that students find it difficult to solve problems in everyday life.

Based on the description above, to improve student learning outcomes in angular learning researchers apply the CTL approach. The CTL approach helps teachers associate material taught with students' real-world situations. The teacher encourages students to make connections between their knowledge and their application in daily life. The CTL approach positions students as individuals who actively construct their own knowledge so that learning is meaningful to students, students will remember the material in the long run, students will also realize the importance. In the CTL approach the teacher cannot tell how a problem is

solved, explain the procedure for working on a problem. Teachers are prohibited from explaining a concept or material. The role of the teacher is only limited to facilitating student learning, guiding students to build knowledge, and directing students to find mathematical concepts.

Contextual Teaching and Learning Approach

Contextual words (contextual) come from the word context which means relationship and atmosphere, so Contextual Teaching and Learning (CTL) can be interpreted as a learning related to a particular atmosphere. In general contextual contains relevant meaning, there is a relationship or direct connection, following the context that carries the intent, meaning, and interests. Understanding the contextual teaching and learning approach is expressed by Nurhadi (2003: 1) as follows.

“A contextual approach (Contextual Teaching and Learning) is a learning concept that helps teachers associate the material they teach with the real-world situation of students and encourage the relationship between their knowledge and its application in their lives as family members and society.”

Through the CTL approach the learning process takes place naturally, because it involves the real-world life of students directly. In learning, students are active in exploring their own knowledge, so that their learning will be meaningful. Students will remember what they have learned in the long run. By linking learning material to students' world situations, students are expected to be able to apply what they have learned in their daily lives.

Teachers also play an important role in choosing learning materials that are considered important for students to learn in CTL activities. This is because every child has a tendency and passion to learn and try things that are considered new and strange. Besides the role of the teacher in the Contextual Teaching Learning approach the role of the teacher is to help students find a connection between new experiences with previous experiences, because in the Contextual Teaching Learning in the learning process students must look for the relationship between the material being studied with their experiences in everyday life.

The essence of CTL learning (Contextual Teaching learning) includes seven stages, Nurhadi (2003: 5), there are:

a. Constructivism

In the opinion of Nurhadi (2003: 11) "Humans must construct that knowledge and give meaning through real experience". Based on this opinion, it can be explained that

constructivism is the process of building or constructing new knowledge in the cognitive structure of students based on experience. This is what underlies CTL (Contextual Teaching Learning).

b. Inquiry

Inquiry is learning based on search and discovery through a systematic process of thinking. In general, the inquiry process can be done through several steps, namely: formulating the problem, submitting a hypothesis, collecting data, testing hypotheses based on the data found, and making conclusions. The inquiry component is important in CTL because through a systematic thinking process, students are expected to have a scientific, rational, and logical attitude, all of which are needed as the basis for the formation of creativity. In Bruner's opinion (Dahar, 1996) that:

Through learning discovery, knowledge will last or can be remembered, discovery learning outcomes have a better transfer effect than learning outcomes with conventional learning, and overall discovery learning improves students' reasoning and students' ability to think freely.

c. Questioning

Knowledge that someone has, always starts from asking. Asking is a characteristic of the curiosity in an individual. In the learning process through CTL, the teacher does not convey information just like that, but will lure students to find their own. The questioning role is very important, because through the questions the teacher can play and direct the students to find out the material they are learning.

According to Sutardi (2007: 97) in a questioning learning has several benefits, namely are:

Exploring information both administration and academic, checking students' understanding, generating student responses, knowing how far students want to know, knowing things that students already know, focusing students' attention on something the teacher wants, to raise more questions from students, and to refresh students' knowledge.

d. Learning Community

The concept of learning society in CTL is in learning that there is a process of collaboration with others. Cooperation can be in the form of sharing between friends, between groups, or between people who already know to people who do not know.

In learning, the application of learning communities can be done through study groups. Students are divided into several groups whose members are heterogeneous, both from their

abilities and seen from their talents and interests. According to Lie (2007: 43) there are several reasons for heterogeneous group formation, namely are:

First, heterogeneous groups provide opportunities for teaching each other (peer tutoring) and mutual support. Second, this group increases relations and interactions between races, religions, ethnicities and genders. Finally, heterogeneous groups facilitate classroom management because with one person with a high academic ability, the teacher gets one assistant for every three people.

e. Modeling

Modeling in CTL is in the learning process by demonstrating something as an example that can be replicated by each student. This modeling process is not limited to just the teacher, but the teacher can utilize students who are considered to have the ability, thus students can be considered as models. This modeling is a very important component in CTL, because through modeling students can avoid theoretical abstract learning.

f. Reflection

Reflection is a way of thinking about what you have just learned or thought back about what has been done in the past. Through the process of reflection, the learning experience will be included in the cognitive structure of students which will eventually become new knowledge. Through reflection students can also update the knowledge that has been formed, or can add to the knowledge they already have.

In the learning process using CTL, every end of learning, the teacher provides opportunities for students to reflect or recall what they have learned. Let students freely interpret their own experiences, so students can conclude about their learning experiences.

g. Authentic Assesment

In CTL, learning success is not only determined by the development of intellectual abilities, but the development of all aspects. Therefore, the assessment of success is not only determined by learning outcomes such as tests, but also the learning process through authentic assesment.

Authentic assesment is actually a process that the teacher does to gather information about the development of learning done by students. This assessment aims to find out whether students really learn or not, whether the learning experience of students has a positive influence on the development, both intellectual and mental of students. Authentic assessment is carried out in an integrated manner with the learning process. This assessment is carried out

continuously as long as learning activities take place, therefore, the pressure is directed to the learning process not to learning outcomes.

The essence of Math

Mathematics is one of the most important fields of study to be taught in elementary schools. As an elementary school teacher, before teaching mathematics to elementary school children should know what mathematics is. Suwangsih and Tiurlina (2006: 3) state that: “The word mathematics comes from Latin words mathematics which was originally taken from the Greek words mathematike which means to study. Mathematike words also relate to other similar words, namely mathein or mathenein which means learning (thinking).”

Based on the statement above mathematics is a science that emphasizes more on the way of thinking (reasoning), because in the early stages mathematics was formed from human experience. Humans do activities in understanding mathematics, the activity is an experience which will then be processed in his mind, processed in an analysis and synthesis with his own way of thinking or his own reasoning in his cognitive structure so that it comes to a conclusion in the form of mathematical concepts. In order for mathematical concepts to be easily understood by others, global notation and terms are used.

Concept of Angle

“The angle is a combination of two lines of AB and AC whose starting points coincide with points AB and AC, each of which is called the angular foot (Priatna, 2004: 10).”

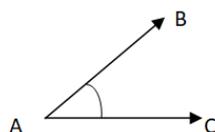


Image 1. Acute Angle

An angle is named using one capital letter or three capital letters. For example in Figure 1 above the name of the angle is angle A, angle BAC or angle CAB. There are four types of angles that we need to know that are studied in fourth grade in elementary school, namely: right angle, blunt angle, and sharp angle and straight angle. Right angles are angles perpendicular to each other and the size is 90 degrees, blunt angles are angles whose size is more than 90 degrees, the acute angle is the angle of less than 90 degrees, while the straight angle is straight with an angle of 180 degrees.

METHOD

Classroom action research is a learning activity in the form of an action that is deliberately raised and occurs in the classroom. This action is given to students according to the direction of the teacher. The method used in this study is a qualitative method with classroom action research techniques (action research). Suharjono (Arikunto, 2006: 58) who stated that, "Classroom action research is an action research conducted in the classroom with the aim of improving / improving the quality of learning practices".

In line with the opinion of Wiriaatmadja (2008: 13) regarding the definition of classroom action research namely, classroom action research is how a group of teachers can organize the conditions of their learning practices, and learn from their own experiences. They can try an idea of improvement in their learning practices, and see the real influence of that effort. From the opinions of the experts above it can be concluded that classroom action research is a teacher's effort to solve real problems that occur in the classroom to improve the learning process.

The subjects of the study were 24 students, consisting of 13 female students and 11 male students. The focus of this class action research is angular learning in fourth grade in elementary school. This class action research will be carried out in fourth grade in SD Negeri 104 Langensari – Senanggalih Kecamatan Coblong Bandung City.

The action plan can be described as follows.

A. First Cycle

First Action : determine the angle of an object or shape

B. Second Cycle

Second Action : mention angle names

C. Third Cycle

Third Action : describe angles

This class action research plan consists of 3 cycles. Each cycle consists of 1 action. Each cycle consists of four stages, namely, planning, implementation, observation, and reflection. The planning phase (plan) is an action to improve, improve or change students' behavior and attitudes as a solution. The action / action stage is what things the researcher will or must do as an effort to improve, increase or change as desired in the study. Observation stage (observing) is an activity of observing the results or impacts of each action carried out in research, and reflection (reflect), namely the stage where the occurrence of cystensis analysis,

interpretation and explanation (explanation) activities on various information obtained from implementation of actions and observations.

Data collection is the core activity in PTK because this process is a determinant of whether the PTK process is good or not. The data to be collected from the action is in the form of qualitative data. The collected data is then analyzed and reflected. to analyze data that occurs during learning actions, in the form of descriptions of meaningful research findings.

Data analysis is done as a test of the action hypothesis that has been formulated, then the data is analyzed. Data processing and analysis are carried out continuously from the beginning to the end of the learning process. Data obtained from the test results are then calculated and quantitative data analysis is done by looking for \bar{x} and variance.

RESULTS AND DISCUSSION

Results

Based on the results of research that has been carried out through the description process, analysis and reflection of each cycle and each action, various findings will be discussed in the description below:

Description of First Cycle

In this first cycle consists of 1 action, namely action 1 regarding material recognizing the angle of an object or waking up. Learning using the Contextual Teaching and Learning approach involves seven main components of learning, stated by Depdiknas (2003: 5) namely constructivism, asking, finding, learning communities, modeling, and actual assessment. However, in the first cycle of learning there are deficiencies and obstacles faced by researchers in increasing activity and learning outcomes through the Contextual Teaching and Learning approach.

To clarify the discussion of cycle I which is associated with research questions, an essential finding is needed regarding the research question in the first cycle research process. The essential findings in first cycle can be seen in Table 1. below.

Table 1. Essential Findings of First Cycle

Cycle	Learning materials	Essential Findings
I	Determine The Angle Of An Object Or Shape	<p>a. Student activity in angular learning using the Contextual Teaching and Learning approach in fourth grade elementary school is good enough but not maximal. This is evidenced by the fact that there are students who do not participate in group activities, there are students who do not have the ability to communicate that is not dare to ask questions and express opinions, and there are students who show less attitude in good learning, the average value of student activity reaches 69,1.</p> <p>b. Student learning outcomes in angular learning using the Contextual Teaching and Learning approach in the fourth grade of elementary school is good enough, the average value of student learning outcomes reaches 64.5 and is above KKM (Minimum completeness criteria) fourth grade SDN 104 Langensari Senanggalih which ranges 60.00. However, the average value of students has not been declared complete because the average value is still below the standard mastery learning that ranges from 75.</p>

Based on the essential findings in Table 1, it shows that in the first action, the students' activities in angular learning using the Contextual Teaching and Learning approach are good enough but not optimal. In his opinion, if the researcher asks students not to give a response and students do not show a good attitude in learning as students do not follow the learning well and show less curiosity towards learning material. The results of the average value of student activity reached 79.1 and the average value of student learning outcomes reached 68.3. The average value of student learning outcomes that reached 68.3 has not been declared complete because it is still below the standard mastery learning that ranges from number 75. When viewed by individuals only 14 students have declared complete learning based on mastery learning.

Description of Second Cycle

In this second cycle consists of 1 action. Action in second cycle concerning mention angle names. The essential findings in second cycle can be seen in Table 2. below.

Table 2. Essential Findings of Second Cycle

Cycle	Learning materials	Essential Findings
II	Angle Names	<p>a. Students' activities in angular learning using the Contextual Teaching and Learning approach in fourth grade of elementary school are quite good from action 1. This is evidenced by the decreasing students who do not participate in group activities, students have little courage to ask questions, express opinions and responding to researchers' questions, besides that students have begun to show enthusiasm in participating in learning even if it is not maximal. The value of student activity has increased from action 1, reaching 73.3.</p> <p>b. Student learning outcomes in angular learning using the contextual teaching and learning approach in fourth grade of elementary school is good enough and has increased, the average value of student learning outcomes reached 66.8 and already above the minimum completeness criteria (KKM) fourth grade of SDN 104 Langensari-Senanggalih, which ranges from 60.00. However, the average value of students has not been declared complete because the average value is still below the standard mastery learning that ranges from 75.</p>

Based on the essential findings in Table 2, it shows that in the first action, students' activities in angular learning using the Contextual Teaching and Learning approach have increased from cycle I but are less than optimal. Students have actively participated in group work, students have started to carry out discussion activities, even though they have not been maximized. Students have also begun to respond to researchers' questions, students are little by little brave to ask and express their opinions. In the learning process, students show enthusiasm in participating in learning, but students have not shown an attitude of curiosity towards learning material. The results of student activity values and student learning outcomes have increased, with an average value of student activity reaching 81.8 and student learning outcomes reaching an average of 73.5. Student learning outcomes have not been stated completely because it is still below the standard mastery learning that ranges from number 75. Students who have declared complete learning based on mastery learning have increased from action 1, namely as many as 16 students.

Description of Third Cycle

In this third cycle consists of 1 action concerning describe angles material. In this third cycle, researchers try to further enhance student activities both in aspects of cooperation, communication, and attitudes in learning. In addition, researchers also seek to improve student learning outcomes. But in the third cycle learning is inseparable from the shortcomings and obstacles faced by researchers in increasing the activity and student learning outcomes through the Contextual Teaching and Learning approach. To clarify the discussion of third cycle which is related to research questions, an essential finding is needed regarding the research question in the third cycle research process. The essential findings in third cycle can be seen in Table 3. below.

Table 3. Essential Findings of Third Cycle

Cycle	Learning materials	Essential Findings
III	Describe Angles	<ul style="list-style-type: none"> a. Student activity in angular learning using the Contextual Teaching and Learning approach in fourth grade elementary school continues to increase. This is evidenced by the increasing number of students who actively participate in class discussions. Student communication skills are increasing, the number of students who dare to ask questions and express opinions more and more, as well as the attitudes of students in the learning process are getting better. The average value of student activity reaches 82.2. b. Student learning outcomes in angular learning using the Contextual Teaching and Learning approach in fourth grade elementary school continued to experience an increase in the average value of student learning outcomes reaching 77.5 and was declared complete because the average value was above the standard mastery learning that ranged in number 75.

Based on the essential findings in Table 3, it shows that in the third action it has increased compared to the previous action, this is evidenced by the results of the average value of student activity that increased which reached 90. Good student collaboration. Students can increasingly foster mutual respect for friends' opinions. In addition, students' communication skills are increasing. More and more students dare to ask questions, and express their opinions. In the learning process, students show enthusiasm in learning, and students begin to show

curiosity about learning material. Student learning outcomes reach an average of 85 and have been declared complete because it is above the standard mastery learning that ranges from number 75. Students who have been declared complete learning based on mastery learning are 23 students.

Discussion

Based on the discussion of research results from each cycle above, it can be concluded that student activities and student learning outcomes from first cycle to third cycle continue to increase. The increase in student activity from first cycle to third cycle is seen in Figure 1 below:

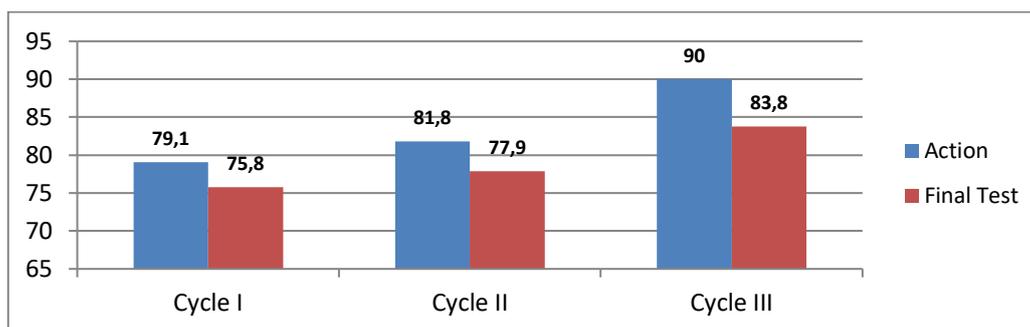


Figure 1. The results of the average value of activities from first cycle to third cycle

From Diagram 1 above, it shows that student activity from first cycle to third cycle has experienced a significant increase. The average activity in the first cycle reached 79.1; in second cycle the average activity increased from the first cycle which reached 81.8; and the average third cycle is 90. While the process of improving student learning outcomes can be seen in Diagram 2 below:

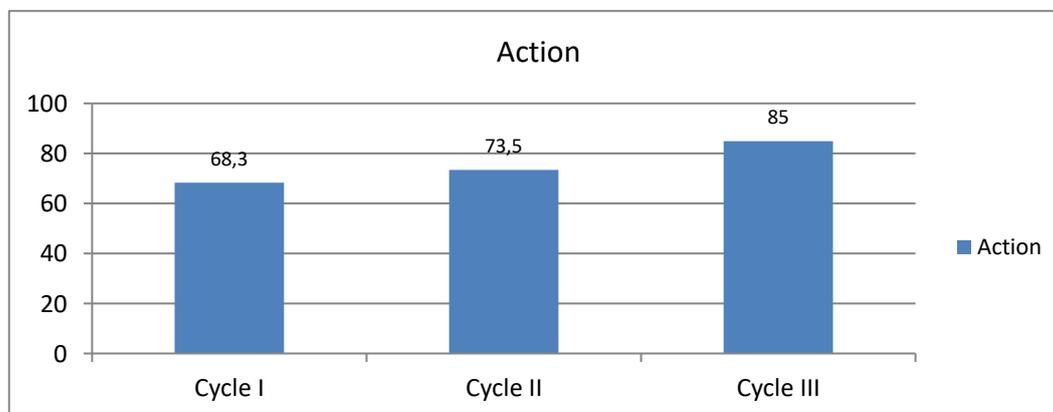


Figure 2. Average Value of Student Learning Outcomes From First Cycle to Third Cycle

From the diagram above, it shows that student learning outcomes from first cycle to third cycle have experienced a significant increase. The average student learning outcomes in the first cycle reached 68.3; in second cycle the average student learning outcomes reached 73.5; and in the third cycle the average student learning outcomes reached 85. The increase in student activity and student learning outcomes were quite significant because researchers have made improvements and improved the quality of learning from first cycle to third cycle.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the results of the study, the discussion can be summarized as follows.

1. The use of contextual teaching and learning approaches in angular learning in fourth grade of elementary school has increased student activity. Students' attitudes and collaboration in group activities become better. Group activities can shape students' social attitudes. In addition, students become more daring to express their opinions and be active in question and answer. Through discussion and question and answer activities can foster mutual respect for other people's opinions and by involving students in peer tutoring activities can foster a caring and supportive attitude.
2. The use of contextual teaching and learning approaches in angular learning in fourth grade of elementary school can improve student learning outcomes. Students have been able to understand the material in solving the problems found in everyday life. By linking the material angle with the life of the real world students have helped students to understand the learning material, so that student learning outcomes are increased. The increase in student learning outcomes is evidenced by the average value of students who continue to increase from first cycle to third cycle.

Suggestion

Based on the findings of the research implementation on the Contextual Teaching and Learning approach in angular learning in fourth grade of elementary school, the researchers proposed the following recommendations:

1. Contextual Teaching and Learning approaches can be applied in angular learning can help increase student activity in following the learning process.
2. The use of the Contextual Teaching and Learning approach requires a considerable amount of research time with more detailed supporting teaching aids to obtain more optimal results.

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