

Improving Students' Activity and Motivation in Mathematics Learning through Lesson Study at SMP Cokroaminoto Palopo

Ma'rufi¹, Muhammad Ilyas², Nurmala Saruman³, Fahrul Basir⁴

Affiliation: Mathematics Education, Universitas Cokroaminoto Palopo^{1,2,4}, SMP Cokroaminoto Palopo³

(marufi.ilyas@gmail.com¹), (muhammadilyas949@yahoo.com²),
(nurmalasaruman0513@gmail.com³), (fahrulmail2@gmail.com⁴)

Abstract

This study is an experimental study that aims to improve students' learning activity and motivation in mathematics learning through lesson study in the 7th grade of SMP Cokroaminoto Palopo. The design used was a pre-post questionnaire design. The experimental unit in this study was the 7th-grade students of SMP Cokroaminoto Palopo consisting of 23 students. The sampling technique used was total sampling. The instruments used in this study were observation sheets of student activities and student motivation questionnaires. Data collection were data of students' learning activity and data of students' learning motivation. The analysis used was descriptive and inferential statistical analysis. Implementation of lesson study consists of four cycles and three stages, namely plan, do, and see. The results showed that descriptively there was an improvement in student activity in each cycle and inferentially an improvement in motivation to learn mathematics in 7th-grade students of SMP Cokroaminoto Palopo.

Keywords: *Learning Activity, Learning Motivation, Lesson Study*

1. Background

Mathematics lessons by students are generally seen as difficult and frightening subjects. For students, mathematics is difficult because it is difficult to understand, filled with formulas, too many assignments, fierce teachers and mathematics learning approaches that make students feel uncomfortable during teaching and learning activities, so that their concern for the importance of mathematics as part of life cannot be they feel the benefits. This is the reason why students seem to lack motivation to study mathematics. The low motivation factor in learning mathematics is considered as an urgent problem that must be fixed immediately because it will be an obstacle in the success of the mathematics learning process.

Palmer and Goetz believed that motivational beliefs are important factors that affect self-learning and that motivation is a key factor in helping students take responsibilities in learning (Huang, 2016). Henson and Eller stated that to be able to improve student academic achievement, things needed to focus on aspects of cognitive learning in students, namely: (1) developing conceptual skills, (2) maximizing schemes and transferring skills in learning, (3) increase student motivation, (4) instill confidence in students, (5) be able to challenge students (challenging), (6) identify the learning styles of each student, and (7) develop good thinking skills (Qudsy, 2019).

Motivation is a motive that has become active when people do an activity. While the motive is the strength found in a person that drives that person to carry out certain activities to achieve the goal (internal disposition). This motif is not always active in a person. At one time the motive was active so that people were eager to do an activity, or students were eager to learn, but at one time other motives emerged that were inactive motives, meaning that motivation did not arise, so students were not encouraged to move or were eager to learn (Risdiawati, 2012)

Thomas M. Risk in Rahmadani (2014) stated about teaching and learning as follows: "Teaching is the guidance of learning experiences" (teaching is the process of guiding learning experiences). The experience itself is only possible if the student reacts with his own environment. Hardiman in Rahmadani (2014) explains that what is meant by learning activities are physical or psychological activities. This activity means two related actions. This action can produce optimal learning if between physical actions such as students who are reading and psychic actions such as students thinking about something, it is balanced and vice versa. Balanced deeds are called learning activities.

Based on the description above, this study aims to improve students' activity and motivation in Mathematics Learning through Lesson Study at Cokroaminoto Palopo Middle School.

2. Methods

This type of research is a quasi-experimental study consisting of one experimental class using a pre-post questionnaire design. This study uses 4 lesson study cycles consisting of plan, do and see. The model teacher in this study consisted of 1 mathematics subject teacher and 1 mathematics lecturer. The mathematics teacher conducts research for the first 2 cycles and the mathematics lecturer conducts research for the next 2 cycles. The experimental unit in this study was the 7th-grade students of SMP Cokroaminoto Palopo consisting of 23 students. The sampling technique used was total sampling. The instruments used in this study were observation sheets of student activities and student motivation questionnaires. Data collection were data of students 'learning activities and data of students' learning motivation. The analysis used was descriptive and inferential statistical analysis.

3. Results and Discussion

Based on the results of a questionnaire analysis of students' mathematics learning motivation taught by lesson study, data obtained are as in table 1.

Table 1. Statistics scores of pre-questionnaire, post-questionnaire and mathematics learning motivation gain

Statistics	Statistics Score		
	Prequestionnaire	Postquestionnaire	Gain
Subject	32	32	32
Maximum Score	79,00	99,00	0,94
Minimum Score	58,00	73,00	0,35
Range	21,00	26,00	0,59
Mean	67,88	85,03	0,55
Variance	30,63	48,68	0,02
Standard Deviation	5,53	6,98	0,15

Based on the data in table 1 above, students' motivation to learn mathematics in the pre-questionnaire shows that the average value is 67.88, while the post-questionnaire shows that the average value is 85.03. Descriptively it can be said that students' mathematics learning motivation in the experimental class is better than before learning with Lesson Study. The classification of increasing students' motivation to learn mathematics is presented in table 2.

Table 2. Classification of normalized gain of students' learning motivation

Coefficient of gain normalized	Classification	Frequency	Percentage (%)
$g < 0,3$	Low	0	0,00
$0,3 \leq g < 0,7$	Middle	27	84,38
$g \geq 0,7$	High	5	15,62
Sum		32	100
Average		0,55	
Category		Middle	

Based on the table above, an increase in students' learning motivation is obtained after learning is implemented using lesson study. As for those who get an increase in motivation to learn mathematics with a moderate category the number of student frequencies is 27 people with a percentage of 84.38%, while the increase in motivation to learn with a high category of the frequency of students is 5 people with a percentage of 15.62%.

Based on table 2 above it can be seen that the increase in students' motivation to learn mathematics taught using lesson study is in the medium category.

The results of research on the activities and motivation of students from cycle 1 to cycle 4 are described as follows:

Cycle 1

PLAN is held on Tuesday, 20 March 2018 in the chair room of the mathematics education study program. This activity was attended by 3 researchers, 1 model teacher and 8 observers. The things discussed in this plan are the worksheets that will be used in DO and Lesson design activities.

DO is carried out on Wednesday, March 28, 2018 at 07.30 - 09.30 WITA. The model teacher in this activity is Mrs. Murnia, the material being taught is to find the formula for the surface area of beams and cubes. This activity was attended by 3 researchers, 7 observers and 1 documentary.

The SEE will be held on Wednesday, 28 March 2018 at 12:10 - 12:30 WITA. The model teacher in this activity is Mrs. Murnia, the material being taught is to find the formula for the surface area of beams and cubes. This activity was attended by 3 researchers, 7 observers and 1 documentary. Reflection results are (a) there are students who use teaching aids that are not in accordance with their functions, (b) there are still many students who do activities outside the learning process, (c) LKS distributed is not understood by students so that the model teacher uses a lot of time to explain the LKS. Suggestion observer for the next meeting The worksheet that will be distributed needs to be filled with command lines so that students can easily understand and can do the instructions themselves in the worksheet, (d) students' motivation in learning is still lacking, so for the next meeting students who are motivated to learn less need to be given encouragement / motivation so that learning motivation can be increased.

Cycle 2

PLAN will be held on Wednesday, 28 March 2018 in the chair room of the mathematics education study program. This activity was attended by 3 researchers, 1 model teacher and 8 observers. The things discussed in this plan are worksheets that will be used in DO activities where worksheets are made containing instructions so that students are easier to work on worksheets, Lesson design, sitting positions between students in groups so students are easy to interact and how to build student motivation in the learning process.

DO is held on Saturday, 31 March 2018 at 07.30 - 09.30 WITA. The model teacher in this activity is Mrs. Murnia, the material taught is to find the prism surface area formula. This activity was attended by 3 researchers, 8 observers and 2 documentaries.

The SEE at Cokroaminoto Palopo Middle School was held on Tuesday, 31 March 2018 at 09.40-10.00 WITA. The model teacher in this activity is Mrs. Murnia, the material being taught is finding the prism surface area formula. This activity was attended by 3 researchers, 8 observers and 2 documentaries. Reflection results are, (a) in terms of independence in doing worksheets, student independence is still lacking, such as when students' answers are not justified they will work on their worksheets, (b) student cooperation is still lacking, they only occasionally work together to work on the worksheets provided, (c) the students' algebraic abilities are still low, seen when working on algebraic operations, students stop working on worksheets, later assisted by new models of teachers working on their worksheets again, and (d) learning in cycle 2 has increased from previous meetings, cognitive processes have been experienced by students, it's just that there is a general phenomenon where students are lazy to read, so to increase students' willingness to read, we first give time to students to read the worksheet before doing it.

Cycle 3

PLAN will be held on Saturday 31 March 2018 in the chair room of the mathematics education study program. This activity was attended by 3 researchers, 1 model teacher and 8 observers. The things discussed in this plan are, LKS that will be used in DO activities, Ways to increase student confidence, Lesson design, Ways to reduce misconceptions experienced by students, Increase student knowledge about prerequisite material.

DO is held on Wednesday, April 4, 2018 at 07.30 - 09.30 WITA. The model teacher in this activity is Mr. Fahrul Basir, the material taught is to find the formula for the surface area of the pyramid. This activity was attended by 3 researchers, 7 observers and 1 documentary.

The SEE will be held on Tuesday, 28 March 2018 at 12:10 - 12:30 WITA. The model teacher in this activity is Mr. Fahrul Basir, the material taught is to find the formula for the surface area of the pyramid. This activity was attended by 3 researchers, 5 observers and 1 documentary. Reflection results are, (a) namely cooperation between students, in groups 1,2 and 3 cooperation between students in groups already exists, but in group 4 cooperation is still lacking, (b) Students sometimes forget the prerequisite material such as rectangular area and area triangle, (c) in terms of student activity is good, all students have done their worksheets, maybe because the worksheets are distributed individually, (d) The drawback is that at the time of evaluation, only one student understood the steps that in determining the surface area of the pyramid on which the base is triangular in shape, the total area of all the fields is summed, while the other students only understand that the surface area of the pyramid is the area of the base plus the total area of the vertical plane. Where the vertical plane is not the same in the triangle pyramid.

Cycle 4

PLAN is held on Wednesday, April 4, 2018 in the chair room of the mathematics education study program. This activity was attended by 3 researchers, 1 model teacher and 8 observers. The things discussed in this plan are, LKS that will be used in DO activities, Ways to reduce the selfishness of students who have abilities above their peers, namely by implementing a peer tutoring system, Lesson design, and How to reduce misconceptions experienced by students.

DO is held on Saturday, 07 April 2018 at 07.30 - 09.30 WITA. The model teacher in this activity is Mr. Fahr Basir, the material taught is to find the formula for the volume of beams and cubes. This activity was attended by 3 researchers, 5 observers and 1 documentary.

The SEE will be held on Tuesday, 31 March 2018 at 09.40-10.00 WITA. The model teacher in this activity is Mr. Fahrul Basir, the material being taught is finding the prism surface area formula. This activity was attended by 3 researchers, 5 observers and 1 documentary. Reflection results are, (a) learning in this cycle is good, student activity increases. However, there are some students who have never participated in the previous cycle so that they are not accustomed to learning that has been carried out, (b) In terms of LKS workmanship is good, students can work on their own worksheets without being asked to work even though there are some students who have not finished working on LKS which is given. Student mistakes namely when writing length, width and height on a cube, (c) cooperation between students in this group is good, students are calm in doing worksheets and students' confidence has also increased, students have the courage to ask the teacher if there are models that are not understood, (d) in group 2, Hijriati and Adriansyah who are active in doing worksheets, but the lack of Hijriati is that he immediately gives answers to his group friends without explaining how to obtain these answers, (d) the model lecturer has carried out learning in accordance with the planned design lesson previous.

4. Conclusion

Based on the results and discussion above, the conclusion of this research is mathematics learning through lesson study, improving students' activity and motivation on class seven SMP Cokroaminoto Palopo.

5. Citation and References

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