THE EFFORTS TO ENHANCE MATHEMATICS ACTIVITY USING PROBLEM-POSING APPROACH IN STUDENTS CLASS VIII

Aisyah Nur Istiqomah[a], Abdul Taram[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul, Yogyakarta
[a]aisyahnuristiqomah@gmail.com, [b]abdul.taram@pmat.uad.ac.id

ABSTRACT

A less exciting approach to mathematics learning makes student activity in deep mathematics learning. This research aims to increase the learning activities of mathematics by using the problem-posing approach of students of class VIII C Odd Semester Muhammadiyah Junior High School 1 Godean (SMP Muhammadiyah I Godean) Sleman District Academic Year 2017/2018. This study is a Classroom Action Research with the subject of research class VIII C SMP Muhammadiyah I Godean. The object in this study is the learning activities of mathematics students after learning mathematics with a problem-posing approach. The study was conducted in two cycles, each cycle consisting of two face-to-face. The technique of collecting data using observation. Data analysis used qualitative descriptive analysis. This research shows that the problem-posing approach can increase the learning activity of mathematics of VIII C students of SMP Muhammadiyah I Godean of Sleman Regency in odd semester of the academic year 2017/2018. This is evident from the average percentage of analysis results observation sheet activity of students cycle I is 55.60%. The student activity qualifications insufficient criteria, and on the second cycle average percentage analysis results observation sheet student activity increased to 70.05%, then the qualification student activity in good criteria. These results indicate that an increase in student learning activities is quite significant. The results of this study indicate an increase in activity during mathematics learning on the subject of Algebraic.

Keywords: Activity, Problem-posing Approach

INTRODUCTION

Teachers, as instructors or educators have an essential role in realizing educational goals, one of which is to educate the children of the nation as provisions in the future, and towards the formation of the whole human character. In essence, the teacher is a strategic component that plays an important role in driving the life of an advanced nation, especially for a nation in development. In other words, the portrait and face of the nation's future are reflected in the self-portrait of the teacher of the present, and the dynamic progress of the life of the nation is comparable to the image of the teachers during society. The teacher has an honorable position in life in the community, which is to set an example, build and provide encouragement and motivation. Teacher professionalism competencies have great demands considering teachers' importance in the community, nation, and state. In exercising professional authority, teachers must understand the characteristics of students, mastery of the field of study (both scientific and field of study), the ability to organize learning that educates, and the willingness and ability to develop professionalism personality on an ongoing basis. To form effective teaching and learning interactions and can make students active. The more students actively involved in learning, the higher the likelihood of learning outcomes being achieved.

In the process of learning mathematics, there is still often a tendency for teachers who are not active students, who should be more active in implementing learning are students themselves. Teacher teaching methods greatly affect student learning outcomes. There are still many teachers who use the lecture method in teaching and cause students to be passive, only listening to the teacher's explanation. What is meant by students actively learning is students who actively participate so that student activities in learning are far more dominant than the activities of teachers.

One learning approach to improve student activity is to use the problem-posing approach. According to Machmud T. (2009: 73), Problem-posing is one of the criteria in mathematical thinking, one of the goals of teaching mathematics, as stated in the Basic Education curriculum and Secondary School curriculum. According to Shoimin, Aris (2014: 133), problem-posing is a learning model that requires students to compile their questions or solve a problem into more straightforward questions. By practicing making and solving math problems, students can learn actively, and indirectly students will understand the formulas used in the material being studied.

Based on observations on October 11, 2016, at SMP Muhammadiyah 1 Godean, many problems were found in the learning process, namely low student activity in the mathematics learning process. For example, when the teacher explains in front of the class, there are still students who are busy themselves and do not want to do what was instructed by the teacher. The teacher's teaching method is still dominated by the lecture method, so the interaction between the teacher and students has not yet been seen. This, resulting in student activity in learning mathematics, is low.

METHODS

This study uses a class action research method (Classroom Action Research), a method of approach in the teaching and learning process carried out by carrying out the stages of planning, implementing actions, observing, and reflecting actions towards improving teaching and learning processes. This study explained the assignment of submission of questions made by students and returned to students. According to Arikunto, Suharsimi., Et al. (2014: 16), in general, four stages are commonly passed, namely: 1) planning, 2) implementation, 3) observations, 4) reflection and so on until the expected improvement or improvement is achieved.

This research was conducted in the even semester and the place of its implementation in SMP Muhammadiyah I Godean Sleman Regency in the academic year 2017/2018. The subjects in this study were class VIII C of the Academic Year 2017/2018 at Muhammadiyah I Godean Middle School as many as 32 students. The research object was the whole mathematics learning activity using the problem-posing approach of class VIII C students at Muhammadiyah I Godean Middle School. The study was conducted at SMP Muhammadiyah I Godean Odd Semester 2017/2018 Academic Year. Researchers chose Muhammadiyah I Godean Middle School as a research place because the observations on October 11, 2016, found that students' mathematics learning activities were still low, so actions needed to be taken to improve mathematics learning activities.

The research procedure is:

1) Planning. The activities carried out in the action plan are as follows:
   a) Develop a Learning Implementation Plan as a guide for implementing learning in the classroom.
   b) Looking for materials that support the subject matter to be taught.
   c) Arrange observation sheets of the implementation of learning and observation sheets of students during the learning process.
   d) Arrange test questions for students. Test questions are prepared by the researcher with consideration of the mathematics teacher in question.
2) Action. The things done at the implementation stage of the action are the implementation of the plan that was prepared by the previous researcher at the planning stage. Educators carry out learning activities by the lesson plan, while researchers and observers will observe the learning activities. The action taken is flexible in the changes that occur in class. These changes are noted in the observation sheet.
3) Observation**.** Researchers observe the ongoing process of action that has been prepared in the initial planning. The implementation process is recorded and documented—observations made during the learning process. The process of ongoing learning is obtained from observation sheets for students, observations for teachers.
4) Reflection. After actions and observations are made, the next step is reflection. In this reflection, it is analyzed whether the learning process is by the problem-posing approach, and how significant is

the increase in class VIII student activity at SMP Muhammadiyah I Godean. If it is not as expected, a learning improvement plan is made for the next cycle.

Data collection techniques in this research are to use observation and diagnostic tests. In this study, data collection instruments were to use diagnostic tests and observation sheets: Diagnostic tests and content validity and analysis of observation sheet data. The data analysis technique used in this research is a descriptive qualitative method. The data analysis technique that will be used for research problems is to use data triangulation methods. According to Moleong, J Lexy (2009: 330), Triangulation is a data checking technique that uses something outside the data for checking or as a comparison of that data. Indicators of success are components that show how far the level of success demanded by assessors for learning behavior in the final situation (Arikunto, Suharsimi: 2006). According to the Directorate of High School Development (2010: 58), student activities in learning can simply be seen from the efforts of students, namely:

1) Enthusiastic students participate in learning.
   a) Students pay attention to the teacher's explanation.
   b) Students do not do other work.
   c) Students spontaneously work if given an assignment.
   d) Students are not affected by situations outside the classroom.
2) Student interaction with the teacher.
   a) Students ask the teacher.
   b) Students answer teacher questions.
   c) Students use the teacher as a resource.
   d) Students use the teacher as a facilitator.
3) Interaction between students.
   a) Students ask friends in a group.
   b) Students answer questions of friends in a group.
   c) Students ask friends in other groups.
   d) Students answer questions of friends in other groups.
4) Group collaboration
   a) Students help friends in groups who encounter problems.
   b) Students ask for help from friends if experiencing problems.
   c) Students match the answers/concepts in one group.
   d) The division of tasks in groups.
5) Student activities in groups.
   a) Students express their opinions.
   b) Students respond to questions/opinions of peers.
   c) Students work on group assignments.
   d) Students explain their opinions/work.
6) Student participation in concluding the results of the discussion.
   a) Students raise their hands to join in the conclusion.
   b) Students respond to statements/conclusions of friends.
   c) Students perfect the conclusions expressed by their friends.
   d) Students respect the opinions of their friends.

Researchers use it as an indicator of learning activities from the expert's classification of learning activities above. Indicators of success of this study are that if after the learning process is given with the problem-posing approach is marked by a change towards a better direction that is an increase in student activity has increased to reach the minimum criteria of good (≥60%) in learning mathematics by using the problem-posing approach.

RESULTS AND DISCUSSION

This class action research was carried out in 2 cycles, where each cycle consisted of 4 stages, namely planning, implementing, observing, and reflecting. The results of classroom action research consisting of two cycles, namely cycle I and cycle II using the problem-posing approach, are as follows: In cycle I, students do not pay attention to the explanation of the material delivered by researchers and are not serious about doing the assignments given by researchers. Students are still affected by external situations. Only a few students who dare to ask questions to researchers. Some groups are willing to ask questions to other groups. Only a few group members want to discuss work on the problem and its solution. Students do not dare express their opinions on the group. Students still do not dare to raise their hands to conclude and perfect their friends' conclusions. While in cycle II, students are active in teaching and learning activities, it can be seen from students asking material that is not yet understood by students, when working in groups students have begun to actively ask members of their groups to divide the tasks of each group member. When learning occurs, students can already make their questions and solutions, seen when researchers go around to guide students to make questions mostly do not ask questions. Students can also solve problems from other groups, after exchanging questions with other groups, each group member works together to answer questions created by other groups. Student mathematics learning activities have increased. Indicators that have been achieved by students have increased. Based on the observation sheet of student learning activities obtained the percentage of student learning activities in learning using the problem-posing approach as follows:

Table 1. Percentage of Results of Observation Sheets for Student Learning Activities in the Mathematics Learning Phase I and cycle II

No.	Indicator	Cycle 1	Cycle 2	Information
1	Enthusiastic students in following the lessons	55,47%	76,17%	Increase
2	Student interaction with the teacher	59,77%	73,05%	Increase
3	Interaction between students	58,20%	70,70%	Increase
4	Group collaboration	59,38%	69,53%	Increase
5	Student activities in groups	47,27%	64,45%	Increase
6	Student participation in concluding the discussion	53,52%	66,41%	Increase
	Mean	55,60%	70,05%	Increase

Based on the results of the observation sheet of student learning activities, student activity has increased after the implementation of the problem-posing approach with the average criteria of the first cycle of 55.60%. The second cycle increased to 70.05%. For more details will be presented in the following graph:

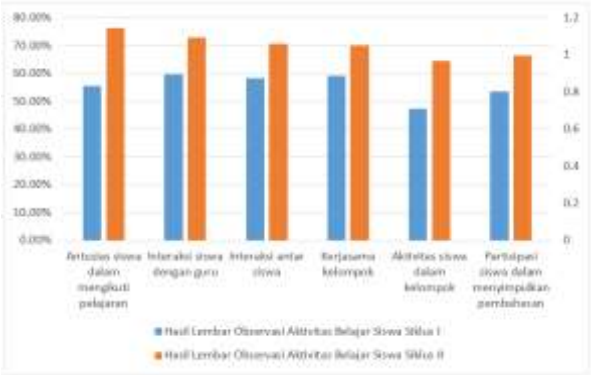

Figure 1. Percentage Graph Results of Observation Sheet Analysis Student Learning Activities in Phase Cycle I and Cycle II

Table 2. Improvement of Learning Outcomes of Cycle I and Cycle II Daily Tests

Evaluation result	Activity		Information
	Cycle 1	Cycle 2	
Highest score	80	100	Increase
Lowest score	40	75	Increase
Average value	67,34	94,53	Increase
Number of students who are complete	10	32	Increase
The number of students who have not yet completed	22	0	Increase
Percentage of students who completed	31%	100%	Increase

Figure 2. Graph of Percentage of Daily Test Results in the first cycle and second cycle.

The results of classroom action research consisting of a cycle I and cycle II regarding Problem-posing learning showed an increase in student learning activities that experienced an increase seen in graphic images (I). In cycle I and cycle II, the mathematics learning process is carried out using the Problem-posing learning approach. From table 2 and graph II shows an increase in student learning activities of each cycle. The average of students' enthusiasm for the following mathematics lessons increases each cycle because they are more interested in learning Problem-posing. After all, this learning model is fun, and better understands the material, although at first, some students were confused about this learning model in the second cycle. All students understood this learning model. This can be seen from the observation sheet of student activity on students' enthusiasm for following the lessons seen in cycle I by 55.47%, increasing cycle II to 76.17%. The average of students interacting with the teacher in the first cycle of 59.77% increased to 73.05% in the second cycle. The average interaction between students also increases because this learning model requires students to have the nature to dare to take risks, students dare to move forward even though the answer is incorrect. This can be seen in the first cycle of 58.20%, increasing in the second cycle to 70.70%. The results of the observation sheet on group collaboration during learning also improved because this learning model required students to be more active and have mutual respect in each group and between groups, group cooperation in determining the results of their group discussions, this was seen in cycle I of 59, 38% increased in cycle II to 69.53%.

The results of observation sheets on student activities in groups also increase because this learning model requires students to be more active in learning, not just one active student. However, all group members are also active in helping group friends; this can be seen from the activities of students in groups in the cycle I amounted to 47.27% increased in the second cycle to 64.45%. Moreover, at the end of learning, students participated in concluding an increase in discussion seen in the results of the observation sheet student learning activities in the first cycle of 53.52% increased in the second cycle of 66.41%. From the overall data above, the research objectives have been achieved in the second cycle so that the research is considered complete and the results of the study show there is an increase in student learning activities in mathematics learning using the problem-posing learning approach class VIII C odd semester of Muhammadiyah I Godean Middle School Sleman Regency academic year 2017/2018.

Overall, it can be concluded that mathematics learning using the problem-posing learning approach can be used as an effort to improve student learning activities in mathematics learning in class VIII C, SMP Muhammadiyah I, Godean, Sleman, in the academic year of 2017/2018, which has experienced an increase, thus questionable actions are accepted.

Table 3. Cycle Triangulation 1

No.	Indicator	Student Observation Results	Conclusion	Action
1.	Enthusiastic students in following the lessons	55.47% of students are quite enthusiastic in following the lessons	Overall students are quite enthusiastic in following the lessons	Researchers motivate students to attend the lesson enthusiastically
2.	Student interaction with the teacher	59.77% of students simply interact with the teacher	Overall students interact enough with the teacher	Researchers motivate students to interact more with the teacher
3.	Interaction between students	58.20% of students have enough interaction with students	As whole students simply interact with students	Researchers motivate students to interact with students
4.	Group collaboration	59.38% of students are quite cooperating with groups	Overall students are quite cooperative with the group	Researchers motivate students to work together with groups
5.	Student activities in groups	47.27% of students are quite active in groups	Overall students are quite active in groups	Researchers motivate students to be active in groups
6.	Student participation in concluding the discussion	53.52% of students have enough participation in concluding the discussion	Overall students have enough participation in concluding the discussion	The researcher motivates students to participate in concluding the discussion

Table 4. Triangulation Cycle 2

No.	Indicator	Student Observation Results	Conclusion	Action
1.	Enthusiastic students in following the lessons	76.17% of students are enthusiastic in following the lessons	Overall students are quite enthusiastic in following the lessons	Researchers motivate students to attend the lesson enthusiastically
2.	Student interaction with the teacher	73.05% of students have interacted with the teacher	Overall students interact enough with the teacher	Researchers motivate students to interact more with the teacher
3.	Interaction between students	70.70% of students have interacted with between students	Overall students have interacted with between students	Researchers motivate students to interact with students
4.	Group collaboration	69.53% of students have collaborated with groups	Overall students are quite cooperative with the group	Researchers motivate students to work together with groups
5.	Student activities in groups	64.45% of students are already active in groups	Overall students are quite active in groups	Researchers motivate students to be active in groups
6.	Student participation in concluding the discussion	66.41% of students already have participation in concluding the discussion	Overall students have enough participation in concluding the discussion	The researcher motivates students to participate in concluding the discussion

CONCLUSION

Based on the results of research conducted using the Problem-posing approach in class VIII C odd semester students of SMP Muhammadiyah I Godean, Sleman Regency in the academic year 2017/2018, it can be concluded that: The use of the problem-posing approach can increase student learning activities. This is evident from the average observation results showing the first cycle of 55.60% (Enough) and in the second cycle increased to 70.13% (Good). Mathematics learning using the problem-posing approach received positive responses from mathematics study teachers and students. At the first meeting of the cycle, one overall student has not shown activities to follow learning using the problem-posing approach presented by the researcher; it happened because students did not understand learning by using the problem-posing approach. However, at the second meeting of the first cycle, students have started to be active and do the researchers' assignments. Then in the second cycle, overall, students have shown an increase in mathematics learning activities using the problem-posing approach. This is evident from the results of students' diagnostic tests.

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