EFFECTIVENESS OF PROBLEM POsing APPROACH COOPERATIVE SETTING TOWARD ABILITY OF MATHEMATICS LITERACY ON STUDENTS CLASS X SMA NEGERI 1 PALOPO

M. Rusli B¹, Fitriani A², Jumarniati³
Mathematics Education, Cokroaminoto Palopo University¹,²,³

Abstract
This study aims to improve the ability to research and become a means of training for beginner lecturers to publish research results in scientific journals, whereas in particular this study aims to see how the effectiveness of Problem Posing Setting Approach and conventional learning of students' mathematical literacy skills. Low mathematical literacy that emphasizes the ability of students to be able to use mathematical skills in everyday life became the basis of this study. This is evident from the results of surveys conducted by international agencies such as the Trend in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA) that put Indonesia in an unfavorable position among the countries surveyed. To overcome this problem, research is done by using Problem Posing Setting Co-operative approach. This research is a type of experimental research with posttest only group design design. The location of the research took place at SMA Negeri 1 Palopo while the instrument that will be used in this research is mathematical literacy ability test, student activity observation sheet and student response questionnaire. This test will be given to the experimental class and control class after the learning is complete. Data analysis techniques use descriptive statistical analysis and inferential statistical analysis. Descriptive statistics are used to describe how the students' activity during the implementation and questionnaire of student response after the application of Problem Posing Setting Co-operative approach. Furthermore, inferential statistics are used to test the hypothesis. Before performing the hypothesis test, the prerequisite test is tested for normality and homogeneity test. Normality test using chi-square test while homogeneity test using F-test. From the results of this study can be concluded that the application of problem posing cooperative setting is effective to students' mathematical literacy ability. The effectiveness of application of cooperative posing problem setting is measured through the result of mathematical literacy ability test of experiment class higher than control class and hypothesis testing using t-test at significant level α = 0,05, the mean of student activity during application of problem posing cooperative setting is in category Active, and student responses are positive.

Keywords: Effectiveness, Ability of Mathematics Literacy, Problem Posing Cooperative Setting

Background
One of the strategic issues in early 2016 is the ASEAN Economic Community (Asean Economics Community). Entering the era of Asean Economic Community (MEA), Stakeholder Indonesia must follow international standards in order to survive in this global era. Similarly, the world of education, including mathematics education, must be able to excel in the international world. But unfortunately from time to time math skills in international forums are still apprehensive. This is evident from some of the results of surveys conducted by international institutions such as the Trend in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA) that put Indonesia in an unfavorable position among the countries surveyed.

The TIMSS survey, conducted by the International Association for the Evaluation and Educational Achievement (IAE) conducted every 4 (four) years puts Indonesia at position...

The TIMSS and PISA studies lead to the conclusion that the students' mathematical literacy skills are low, the weakness and the lack of students in analyzing, reasoning, conveying ideas effectively, formulating, solving, and interpreting mathematical problems in various forms and situations. In addition, students also still not able to use concepts, procedures, facts, and principles as a tool to describe, explain and predict a phenomenon or event. So it needs to be serious attention how to design mathematics learning in school.

In general, mathematics learning in schools so far uses the following order of presentation: (1) taught theories / definitions / theorems, (2) given examples, (3) given exercises or questions. This kind of learning is commonly referred to as conventional learning. Such learning patterns make teachers more dominant in learning, while students are just good listeners and recorders.

This happens in X SMA Negeri 1 Palopo, based on the results of interviews with local teachers, the information obtained that the process of learning mathematics that has been done using conventional learning (conventional) which has been done not satisfactory, it is seen with the average daily test Class X student of academic year 2015/2016. The teacher reveals that students are still having difficulty working on the problem so they can not determine the right solution. In addition, students are also still difficult to do a little different from the example of the questions given by the teacher.

Viewed from another perspective, basically students with great curiosity are usually seen as "troublesome" to the teacher, always asking questions that cause: (a) Time to do something or to continue the lesson. (B) The teacher fears being unable to answer the question so as to degrade the teacher's dignity. As a result in following the learning, the lazy child asked, although not yet understand the material given. The curiosity of students is declining and has an impact on the low motivation to learn.

When students are asked to answer questions or questions posed by the teacher, will be found high levels of anxiety in students. This is because students feel afraid of wrong or think the idea is not good enough. So it takes the application of Problem Posing approach, so that the feeling can be reduced. Students are led to pose issues or questions to their liking and think about how to solve them. The attention and communication of students' mathematics through Problem Posing approach will be better, because difficult questions or problems may only be proposed and resolved by students who have serious attention to mathematics lessons (Upu 2003).

According Upu (2003: 10) Problem Posing can be done individually or classical (classical), pairs (in pairs), or in groups (groups). Problems or problems raised by individual students do not include intervention from other students. Questions are raised without first being addressed by other students. This can result in less developed problems or information content incomplete. Problems posed in pairs or groups can be more weight than the individual question, on the condition that there is collaboration.

Based on the background presented above, then the formulation of the problem of this study are:

1) How is the ability of mathematical literacy of grade X students of SMA Negeri 1 Palopo taught by using Problem Posing Co-operative Setting?
2) How is the mathematical literacy ability of grade X SMA Negeri 1 Palopo students taught using conventional learning?
3) Is the Positive Co-operative Positioning approach more effective to students'
mathematical literacy compared to conventional learning in grade X SMA Negeri 1 Palopo?

Method

This research is a type of experimental research with posttest only group design design. The population of this study is all students of class X SMA Negeri 1 Palopo in the even semester of the academic year 2016 / 2017. While the sample will be randomly selected from the population class to be class of experiment and control class with Cluster Random Sampling technique. The instruments that will be used in this research are mathematical literacy ability test, student activity observation sheet and student response questionnaire. The test of mathematical literacy ability will be given to the experimental class and control class after the learning is complete. The effectiveness criteria of applying cooperative posing setting problem is viewed from comparison of mathematical literacy ability between experimental class and control class, the average of student activity during application of problem posing cooperative setting is in active category, and student response is positive. While the technique of data analysis using descriptive statistical analysis and inferential statistical analysis. Descriptive statistics are used to describe how the students literacy capabilities and student response questionnaire after the application of Problem Posing Cooperative Setting. Furthermore, inferential statistics are used to test the hypothesis. Before performing the hypothesis test, the prerequisite test is tested for normality and homogeneity test. Normality test using chi-square test while homogeneity test using F-test. Then test the hypothesis using t-test on the significant level $\alpha = 0.05$.

Results and Discussion

The result of descriptive statistic analysis about students' mathematical literacy ability through application of cooperative problem posing problem. In this case students' abilities are grouped according to the ability of a person adapted to the mathematical literacy capabilities covered by the PISA study assessment domain. The group of students' mathematical learner capability includes the mastery of the material, the mastery of knowledge and skills and problem solving ability of the knowledge gained to be used to solve the problems that exist in everyday life or real existence.

Model of ability of students of class X SMAN 1 Palopo in solving the problem of mathematical literacy with stages:
1. Preparation is done related to student activity doing mathematical literacy by teacher of SMAN 1 Palopo this include study about mathematical literacy and election and making problem about mathematical literacy.
2. Data retrieval in this research activity of test activity to know student ability to do mathematical literacy problem at SMAN 1 Palopo. The data were collected by using the test instrument about the mathematical literacy given to the experimental class and the control class.
3. Data analysis of students' ability to work on mathematical letters problem and analyze ability into categories based on literacy and level that have been made.
4. Data analysis starts from scoring and analysis of student answers.

The results of student ability analysis from Segi Content, Process and Context in solving mathematical literacy problem include the following groups:
1. Students are able to master mathematical content in working on mathematical literacy problems. In addition, this mathematical literacy problem makes students easy to do math problems although the mathematical content of space and form, change and relevance and number in the test of mathematical literacy ability according to the students is difficult, but the students are able to solve it. The ability of students in mastering mathematical content categorized well, because because it is made with
clear content then the problem is more directed and easily elaborated by the students.

2. Ability to master the mathematical process in solving the problem of mathematical literacy develops by itself after students do the problem. It can be said that this mathematical literacy problem can stimulate the ability of mastering process in doing Mathematics problem with its ability and using appropriate formula especially in category of mathematician, reasoning and argument, problem solving and using mathematic tools.

3. Ability mastery of the context of mathematics students have a good category that can clarify students in solving problems, the ability of mastery of a good mathematical context allows students to find the right way and answer in working on mathematical literacy problems. It can be concluded that students are able to master the context of mathematics, especially general categories and science.

Factors supporting the students' ability analysis to solve the problem of mathematical literacy are:

1. Readiness of students in conducting tests to menggetahui ability to solve the problem of mathematical literacy.

2. Mathematical literacy problem with learning problem posing, this will facilitate the selection and making of matter in accordance with the material.

3. The selected material has been taught beforehand.

The inhibiting factor of students' ability to solve the problem of mathematical literacy in students of SMAN 1 Palopo follows:

1. Various questions that make students think too hard to make students difficult to understand perfectly.

2. Students are not accustomed to working on mathematical literacy problems so as to assume as a difficult problem.

3. The selected material is difficult material.

The implication in this research is about the ability of students in solving the mathematical literacy problem which includes the mathematical content mastering capability, the ability to master the mathematical process and the ability to master the mathematical context that can be achieved if the mathematical literacy problem is often taught and given in the mathematics learning.

Conclusion

The results of research conducted on the students of class X SMAN 1 Palopo, can be concluded that the application of problem posing cooperative settings effective against the ability of students' mathematical literacy. The effectiveness of application of cooperative posing problem setting is measured through the result of mathematical literacy ability test of experiment class higher than control class and hypothesis testing using t-test at significant level α = 0,05, the mean of student activity during application of problem posing cooperative setting is in category Active, and student responses are positive.

After making the conclusion as for suggestions that can be used to develop the next research and also become input for teachers to develop the problem of mathematical literacy in schools are:

1. Mathematical literacy can be applied in schools to improve students' mathematical skills not only limited to the time of this study alone.

2. Students can learn more about mathematical literacy in order to be a material to follow the development of literacy problem.

3. Students are accustomed to working on mathematical literacy problems through learning posing problems in cooperative learning settings made by teachers in the field of study and find questions via the internet.
4. Assessment of the research may be included in some assessments of the report cards so that the students are serious in the conduct of the research test.

5. Research needs to take into account the right time for research to be held, because the activities that exist in the school can affect the results of research.

References


