

Influences of Problem Posing Method and Conventional Method on Problem-Solving Ability in High-School Student

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Abstract—This research is in the background by base of flexible level of student during a process of learning, which is still happening in the field. Base responsive level of student can be seen as the result of economic test value class XII IPS Year lesson 2017/2018. The purpose of this research is to know the difference of problem-solving ability using problem posing method with the conventional methods in SMAN 1 Parongpong Regency West Bandung. Approach in this research is quantitative with quasi experiment method. The result of the data analysis shows that there are differences of problem-solving ability of students using problem posing method with the conventional methods of the subject of market economics (demand, supply, and price of equilibrium) Based on the result from this research, it is suggested to use problem posing method to improve problem-solving ability.

Keywords—*problem posing method; conventional method; problem-solving ability*

I. INTRODUCTION

Science seems to be something that happens during the life that is understood by the teacher, but the student does not assimilate and transform in him so that the knowledge received by students becomes out-there knowledge rather than in-here knowledge [1,2]. This knowledge will only make the child can remember and memorize who has a long survival period. Though science should always be out-there is something that happens around the world, and in-here as something that happens in him. Learning strategies should not only be limited to teachers delivering materials, but should encourage students to interpret something that is received from the outside so that it can become an understanding in itself. A learning-giving strategy has destroyed human dignity in its independence and creative capacity [3,4].

The low level of cognitive achieved by students through the learning process still occurs within the field. Researchers get data from the result of student's daily test on economy class XII IPS class at SMAN 1 Parongpong on transaction recording material into Trade Company unusual journals. This exceptional journal entry material is included in the Cogential level thinking ability (analysis) because prior to working the students should be capable of understand what is meant in the

matter, classify the account, classify the transactions into each of the special journals. The ability to solve student problems is still low. It can be seen that only 41.5% of students are talented to achieve a score above the KKM. The remaining 58.5% of students are still below the KKM value. This means that the problem-solving ability in IIS class X is still low.

The cause of the low achievement of students in solving problems because students do not understand the problem than the problem, students have not been competent to identify what is known and what is asked about the problem [3,4]. Students have not been capable of select relevant data in solving problems; students are wrong in identifying account posts; students cannot choose the right procedure in solving the existing problems, and have not been able to draw conclusions from what has been learned. One effort that can be done by educators is to innovate learning. At present, most of the learning processes used by teachers are conventional learning methods namely lectured, question and answer and assignment [5-7].

This learning method results in the low ability of students in learning [8,9]. As suggested that learning should use methods of problem solving, inquiry, and learning methods that can foster creative and critical thinking, so that students are able to connect/ connect and solve between economic problems, other lessons or problems related to life real [10].

Problem posing is one of the long-established learning models, Huda and Silver states that problem posing is the first term developed by Brazilian education specialist (Bittar and Ferreira Jr, 2016) defines the word problem as problem or problem so that the submission of the problem is seen as an act of formulating a problem or problem from a given situation [11,12]. Furthermore, Amri states that, in principle, the problem posing models of learning requires students to pose their own questions through independent learning [13,14]. Based on the opinion among the experts above, it can be concluded that the problem posing the model is a model of learning that requires students to learn through the filing of questions and work through the problem independently without the help of teachers [15,16].

The ability to solve problems is an ability that is needed by students. This, will give birth to the motivation for students in finding solution of existing problems to try how to solve them [17]. Solutions obtained in solving problems encountered, will spur students to find solution other than the problems it faces. This if always familiarized, will foster a positive attitude [18].

II. LITERATURE REVIEW

A. Problem-Solving Ability

Problem solving is an interaction between knowledge and the process of applying that uses cognitive and affective factors in solving a problem [18]. Solve the problem means finding ways or paths to achieve goals or solutions that do not easily become real [19]. Solving problems with mathematics learning by Schoenfeld as most solve common problems [20]. Someone stores knowledge information in his memory, just as one wants to solve problems related to mathematics. It can be concluded that solving the problem is an attempt to find a way out of a difficulty, achieve goals that are not immediately achievable and closely related through the process of thinking, learning, memory, transfer, perception and motivation [21].

The problem-solving stage is divided into four important stages: Understand the problem; Make a plan to solve the problem; Carry out problem solving; Re-check the answers obtained [22].

Indicators that show mathematical problem solving [23], namely as follows: Show understanding of the problem (0% - 20%); Designing problem solving strategies (0% -40%); Implement problem-solving strategies (0% -20%); Check the correctness of the answer (0% -20%)

Problem-solving strategies consist of 10 strategies, namely trial, create a diagram, trying on a simpler problem, create a table, find the pattern, break the goal, calculate every possibility, logical thinking, move from behind, Ignoring the impossible [24-26].

B. Problem Posing Method

Problem Posing is done by asking questions or formulating questions from a given situation with several changes, relating to the conditions that have been solved in order to find alternative solutions before the problem. Step's problem, learning model posing that is: 1) The teacher explains the subject matter, the suggested props; 2) Provide practice about the sufficiency; 3) Students ask challenging questions and can complete (done with the group); 4) The next meeting the teacher asks the students to present the findings in front of the class and 5) The teacher assigns individual homework [14].

In the order to develop problem learning model posing (filing matter), can apply the principles: 1) the submission of questions must relate to what is raised from student activities in the classroom; 2) filing questions must relate to the student problem-solving process; 3) the questioning can be generated from the problems in the textbook, by modifying and reshaping the characteristics [24]. This problem posing a model is flexible, impressive, assumes the student is the subject of learning, enables the child to develop his potential as a person

who has the potential of curiosity and strives in understanding his environment.

There are two things that affect the learning objectives of learning methods and learning strategies [27,28]. So the use of good learning methods will improve the achievement of the above goals. One of the learning methods that can be used to improve problem-solving ability is problem posing learning method. Problem posing is a learning activity where students are directly involved in the making of problems and solves them in accordance with the concepts or materials that have been studied [29].

Problem posing learning method is a learning method that emphasizes students asking their own questions or reformulating the questions into simple, simpler questions that refer to solve the problem and can be mastered by students. Where the questions can be pictures, stories, or other information relating to the subject matter. This learning method leads the students to be more active throughout the learning process. In this case, problem posing is one of the learning that demands the student's activity both mental and physical. Selection and application of problem posing learn method will affect the way students learn that initially tend to be passive towards the more active. This can increase children's learning independence, because it directs children to have control over the learning process through knowledge and application of appropriate strategies, understanding their tasks, strengthening decision-makers and learning motivation [30,31].

III. METHOD

This research approach using the quantitative approach. The method to be used is quasi experiment to know the effect of treatment. Research design using factorial design. The research variables, X: Learning method Problem Posing method is an independent variable as treatment and Y: problem-solving ability as a dependent variable.

The step of researchers in collecting data is done as follows:

- The introduction Study Stage. Researchers made observations to SMA Negeri 1 Parongpong to see the learning and teaching processes in schools so that information was obtained related to phenomena and problems in the subject matter of market economics (demand, supply and equilibrium prices) in Parongpong 1 Public High School. Researchers conducted interviews related through the learning process in the Classroom for Economic subjects and conducted interviews about research plans using problem posing method.
- Stage of Research Subject Selection. Researchers determine the class to be used as research subjects either determine the class that will be given treatment or as an experimental class or to be used as a control class.
- Stage Making Research Tools. Research tools that will be made during this research the form of Test and Questionnaire

- Stage of Test and Repair of Research Tools. Questionnaire and tests after being designed by researchers, then tested on students of Class X IIS at 29 SMA Negeri 2 Lembang.
- It gave treatment. Treatment used problem posing learning methods in the experimental class and in the control class using conventional methods (no conditioning of the learning method).
- Post-test. Post-test is done to obtain data the ability to solve the problem after treatment.
- Distribution of Questionnaires. The next stage is the distribution of questionnaires in the control class as well as the experimental class.
- Processing and Data Analysis of Research Results. After all the data collected, the next step done by the researcher is to analyze the data that is by calculating the influence of method of influence of problem posing method.
- Interpretation of Results and Discussion. The next stage is the interpretation and discussion of research results.
- Withdrawals of Research Conclusions and Suggestions.

To test the validity and reliability of test instruments and analysis of research data was conducted using SPSS V-20 application.

IV. RESULTS

Differences in the ability to solve students' experimental and control class problems can be seen from the results of posttest data. Based on the results from the test obtained the score of students' ability to solve problems test scene from the minimum and maximum scores both in the empirical class and control class. The number of students during the experiment class is 65 students, and the control class is 65 students. The learning process in the experimental class is given the treatment of Problem Posing method and control class is given conventional method.

The results showed that problem-solving skills using problem posing methods were taller than using conventional methods, students who learned from the problem posing method obtained a higher post-test average than those using traditional methods. Customary learning method is a learning method that is very common and often used by every teacher in KBM. Even today conventional methods still dominate learning. The current learning method should be in accordance with the 2013 curriculum demands, that is the teacher in the KBM process must use a scientific approach.

Problem-solving skills in the experimental and control classes have a positive influence, but the results the problem solved abilities that use problem posing methods to the learning process take place tend to be taller, to find out more in detail the improvement of the problem-solving skills in the experimental and control classes can be seen. From the completeness of each problem-solving indicator it can be seen in four indicators that the problem-solving ability of students

who use problem posing is higher than those and traditional methods. In the four indicators of problem-solving ability, those using the problem posing method shows a taller percentage than those using conventional methods. Although both classes show improvement in problem-solving skills, experimental classes have increased problem-solving abilities.

V. DISCUSSION

Base on the results of this first hypothesis test in line with preceding studies conducted in Indonesia. This is evidenced by foregoing researchers, namely Chang which states that there are significant differences between students' mathematical problem-solving abilities that follow learning with problem posing learning methods and students' arithmetical problem-solving abilities, which follow learning with conventional learning methods [32]. Thus, the problem posing method influences the ability to solve numerical problems [30,31]. In addition, the researchers conducted by Akay and Boz also confirmed that there were significant differences in statistical problem-solving abilities between students who followed learning the problem posing method and students who followed learning instead of using the problem posing method [33]. Furthermore, research conducted which states that problem posing methods have an influence in improving student creativity [34,35].

Research conducted by Isaksen confirms that problem posing improves students' problem-solving ability, in which the research found differences in problem-solving abilities in the experimental class using problem posing [34]. Research conducted by Chang confirmed that the improvement of the problem-solving abilities of students who get mathematics learning as a problem posing approach is better than students who get traditional learning [32]. The same research was also carried out by Haider and Hussain whose results prove that there is a significant difference between students' learning outcomes of mathematics who learn from the problem posing approach and those who learn to use the conventional (ordinary) approach at a 5% level of confidence [36]. In line with the research conducted by Riley the results the study stated that the improvement of the arithmetical problem solved ability of students who obtained learning a problem posing approach was better than students who obtained traditional learning as well as a strong association between the ability to submit numerical problems and mathematical problem-solving abilities [37].

In addition, based on observations obtained through the field, problem posing learning methods can provide a good response, improve students' intellectual skills in problem solving, make students active and enhance students' curiosity as evidenced by student enthusiasm to seek information from various sources for looking for information answers to problems given each group. Besides that, the problem posing approach can sharpen the understanding of the problem, can grow varied variations of problem solving, and can activate students in learning. Problem posing also trains students in reconstructing their knowledge of problems in their environment and applying this knowledge and skills to develop feasible solutions.

In line with the Gestalt theory proposed by Riley, in this theory, there are laws of observation and law in learning [37]. The essence of this theory is something important in learning that is the right response to solve problems or problems encountered. With the response means someone doing an activity to solve the problems he was facing. There are eight principles of learning. All these principles are related through the learning process that emphasizes that learning is an activity of transferring knowledge, which is done continuously and developing. Using the problem posing method will stimulate students to respond to what they want to achieve in the learning objectives. Students are trained to learn repeatedly so that it will be an experience among the students themselves. Learning from experience will last longer in student memory than just listening or seeing what others do [38,39].

Problem solving is one method that is often used in examinations to clarify topics or to determine student success. Problem posing, on the other hand, is a comprehensive process that includes problem solving. Like many research on problem solving, problem posing is one of the factors that can influence students' success in solving [40-43]. Giving learners reasoning problems in classroom learning activities will make them active participants in the classroom and allow them to think more analytically. Moreover, problem posing is an activity that requires mastery of the subject and the ability to attract relationships between situations. Thus, it is inevitable that students who are given the problem posing method will be superior in showing their ability to solve problems [44].

The ability to solve problems can arise in all areas of life so one must be able to analyze them properly. To achieve this, the solution is how the process we face can be a solution all kinds of problems. In directing learners to have this skill, then the application the method used is very important. Content should include activities related to problem posing, and participants should be given the opportunity to ask their own questions in order to understand the content they have learned [44]. The problem posing is considered as a development tool for critical-thinking skills [45] because it can help students expand what they know to develop mathematical skills and engage them in higher-order thinking [19], in addition to problem posing activities, including an approach which teaches students how to think critically and how to examine their world analytically, therefore, according to them, the importance of critical thinking in learning can be poured into posing problems.

Although research in Indonesia just examines the use of problem posing methods within the field of mathematics alone. However, actually, this method can be using in any field of science. This method cannot only be within the field of mathematics as most of the research that has been done so far, or in the economic field as has been done by researchers. The content offered the problem posing method will lead children to high-level thinking skills such as critical thinking, analytical and creative, so the use this method is more suitable for middle school students, based the division of cognitive abilities according to Bloom, which has been analyzed and published in the curriculum 2013.

VI. CONCLUSION

There are differences in problem-solving abilities in students learning by using problem posing methods compared conventional methods. This means that both methods can improve students' problem-solved skills. From the results the study it was found that of the problem, posing methods had a higher effect on solving problems than using conventional methods.

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