THE IMPLEMENTATION OF PROGRAM BASED LEARNING (PBL) MODEL TO ENHANCE STUDENTS' MATHEMATICS LEARNING ACHIEVEMENT OF GRADE VII A SMP NEGERI 2 GODEAN

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Abstract

This research aims to describe the implementation of mathematics learning through Problem Based Learning (PBL) model dan to know which PBL model may enhance the students' achievement of mathematics learning for grade VII A of SMP Negeri 2 Godean. This is classroom action research through teacher collaboratively. The subject of the research was class VII A of SMP Negeri 2 Godean which consist of 32 students. The data collection were feasibility observation, interview, field note, documentation, pretest, and posttest. The analysis data was analyze descriptively.
The result of the research shows that the average percentage of cycle 1 of feasibility observation was 76.11% which categories good and the average percentage of cycle 2 was 95.56% which categories very good. In the pre observation the average percentage of students' achievement was 50% which categories low and in the cycle 1 was 71.87% which categories high. The problem shows that the average percentage have not fulfill the indicator of success yet which was 75%. By the problem, the research continued to the cycle 2 which the average percentage arise into 87.5% and consider as high criteria. Since the indicator of success of students' achievement fulfilled, so that the posttest is given to the students. The posttest result shows arise of percentage and become 90.62% consider as very high criteria. Based on the data, can be concluded that the implementation of mathematics learning using PBL model consider good and the students' achievement was increase.

Keywords: PBL, learning achievement.

Introduction

Education is the foundation which determine the strength and the progress of the country. Education obtained from formal way or non-formal way. One of formal education is school. School is educational institution which in charge to apply the learning process properly and optimally so that high quality education can be created. Huda (2013: 2) states that learning is the result of memory, cognition, and metacognitition which influence to the comprehension, this

problem usually happens when someone is learning, and the condition usually happen in the daily life, because learning is the natural process of anyone. In the educational field, many sciences should be learned, which one of them is Mathematics subject. Shadiq (2013: 13) states that mathematics is a knowledge which discuss about pattern and regularity.

Based on the early observation in class VII A SMP Negeri 2 Godean, which obtained the condition view of students during the learning process of mathematics subject. During the learning process, when the exercise given to the students, there were some students who could not finish the given exercise since they could not understand the material well. It can be seen by the result score of daily exercise of some students which consider as lower from KKM, the score was below 70. From the 32 students of class VII A, there are 14 students which the percentage was 40% got score below KKM and 18 students which the percentage 60% got score above KKM. The lowest score in class VII A was 25 and the highest score was 100 with the average score was 68,75. It shows that the acievement of students in class VII A was low.

The low achievement of students' influenced by the less of student's activeness in learning mathematics, for example students tend to silence because of less confident to ask to the teacher because they did not understand the material. In the other hand, the condition of the learners still lacks of condusive because of the learning activity still dominated by teacher so that the learning activity in class is passive. The students tend to memories the formula than understand the concept of the given material. It can be seen from the learning process in class while teacher change the question form, students could not finish the given question.

The condition of the learners which less of condusive make the learning process become ineffective. It can be seen from the students which not focus when teacher explain and teacher do not involve the students in the learning process. Based on the problem, can be assumed that

students of class VII A of SMP Negeri 2 Godean is one of class which the learning achievement still under the KKM. Therefore, it is needed to implement the learning model which can increase the students' learning achievement of class VII A of SMP Negeri 2 Godean.

One of model which can increase the students' learning achievement is Problem Based Learning (PBL). Tan (Sulistyarini. M.M, & Santoso. F.G.I, 2015: 60) Problem Based Learning is the use of intelligence variety which need to confrontate to the chance of real world, the ability to facing the new variety and complex. The specific characteristics of PBL model is the learning process started from giving problem in a real life as a learning context to learn about critical thinking and the skill to solving problem, and to get knowledge and essential concept from learning material.

From the above description, the researchers to conduct research on " the implementation of program based learning (pbl) model to enhance students' mathematics learning achievement of grade VII A SMP Negeri 2 Godean" which aims to describe the implementation of learning mathematics through *Problem Based Learning* (PBL) model, to enhance students' learning mathematics achievement of class VII A SMP Negeri 2 Godean and to know whether the *Problem Based Learning* (PBL) model in learning mathematics can enhance students' learning mathematics achievement of class VII A SMP Negeri 2 Godean.

Literature

Barrow (Anwar, 2017: 357), PBL is learning which created from investigation, understanding *learning,* dan give solution from some problems. Thus, the principle of PBL is authentic solving problem. The main problem which bring to the class is starting with stimulus and main

framework of learning process. In PBL model, the students stimulated the skill to solve the problem effectively which in the future may useful in the real world.

Oon Seng Tan (Fathurrohman, 2015: 115) states that problem based learning have characteristics, namely:

1. Learning started by a problem.
2. Making sure which given problem related with real world of the students or integrated with the concept and the problem in the real world.
3. Organizing the subject in problem field, not in exact discipline field.
4. Giving big responsible to the learners in order to make and runs directly to the learning process of theirs.
5. Using small group.
6. Charging the learners to demonstrate which they have learnt in the form of product or work. It may create the skill of the learner. Thus, the skill learned to the learners.

Problem Based Learning consist of five main phases which start from the learner introduction with some problem situation and finished with presentation and work result analysis of the learners. Briefly, the five phases of PBL model in the table as follows:

Table 1. Problem-Based Learning Syntax

Phase	**Teacher Activity**
Phase 1 Provides an orientation about the problem to the students	Teachers discuss learning objectives, describing important logistical needs, and motivating students to engage in problem-solving activities.
Phase 2 Organize students to do research	Teachers help students to define and organize learning tasks related to the problem.
Phase 3 Assisting independent and group investigations	Teachers encourage students to get the right information, carry out experiments and seek explanations and solutions.
Phase 4 Develop and present artefacts and exhibits	Assist students in planning and preparing appropriate artefacts (works) such as reports, models, and helping them to pass them on to others.

Phase 5 Analyze and evaluate the process solving problem	Helps students to reflect on or evaluate their investigations and the processes they use

Source: Richard I (Arends, 2008: 57)

Based on some notion has described, it can be concluded that *Problem Based Learning* is a learning model which based on the principle that the issue *(problem)* is used to enable students to acquire new knowledge and develop the knowledge that has been acquired so that students are more active in the learning process as well as encourage students to be more creative in solving problems faced.

Methodology

The type of the research is *Classroom Action Research* (CAR) and conducted collaboratively which use Tagart and Kemmis research model. This research was conducted in SMP Negeri 2 Godean in class VII A second semester II in January-February of 2014/2015. Subjects in the study were students of class VII SMP Negeri 2 Godean A, while the object of the research is to improve the students' learning mathematics achievement using *Problem Based Learning* (PBL) model. The research design as follows:

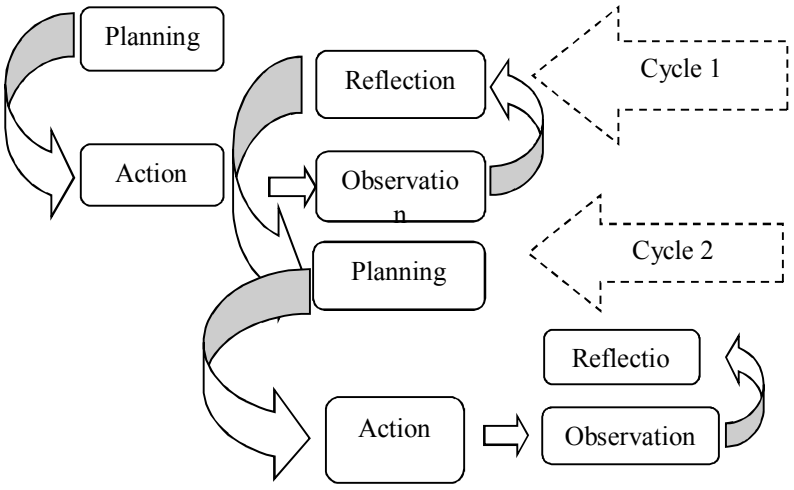

Figure 1. The Cycle of Study Design

The instrument of the study is the Student Worksheet (LKS), feasibility observation sheet, about the *pretest, posttest* questions, interviews, field notes and documentation. While the method of data collection were observation, written test (worksheet of *pretest, posttest* and LKS), unstructured interviews, documentation, and field notes.

The data analysis which used is descriptive qualitative data analysis. The data which obtained in this study are observational data about the learning process, interviews and daily reports. Additional data which obtained is unstructured interviews with students and photos documentation as consideration. The data analyzed is data of observation result of learning implementation and test result.

Findings And Discussion

The research was conducted in January 9, 2016 to January 27, 2016. The research consisted of two cycles. Each cycle held in 2 meetings which the time allocation for each meeting was 3 x 40 minutes. The implementation of the classroom action research in cycle 1 and cycle 2 consists of four phases: planning, implementation, observation and reflection as follows:

The researcher helped by observer observed the learning process in class using arranged observation sheet. The result of analysis observation through *Problem Based Learning* (PBL) on cycle II and cycle II..

Table 2. Analysis Observations Learning Mathematics Cycle 1 and Cycle II

Cycle	Meeting	Percentage	Qualification
I.	1	74.44%	Good
	2	77.78%	Good
	Average	76.11%	Good
II	1	95.56%	Very good
	2	96.56%	Very good
	Average	95.56%	Very good

At the second meeting held Cycle Test 1. Based on the result test on cycle 1, students who achieve a minimum completeness criteria (KKM) there are 23 students or 71.88% of the total students. The explanation is in a form of table as follow.

Table 3. The Percentage of Students' Learning Mathematics Achievement in the Cycle I

No	Description	Results
1	The highest score	100
2	The lowest value	55
3	Average value	79.69

The result of student achievement is arranged to know student's mathematics learning achievement in every cycle and the average development of student achievement. Here is presented a graph of Pre completeness of Value Test, Cycle I, Cycle II, and Post Test.

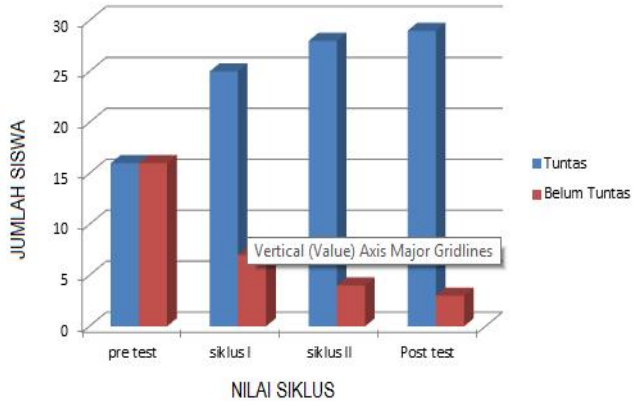

Figure 2. Graph completeness of Value *pretest,* Cycle 1, Cycle 2, and *the Posttest*

Overall, the research run well. In each cycle, every phase of action of learning mathematics through *Problem Based Learning* (PBL) model conducted by teacher in a proper way. Yet, the action of cycle 1 still have lack and need to be improved, namely:

1. Teacher have not give aperception, informed the learning model, and deliverd the main material on the next meeting.

2. Some group which discuss do not involve all of the member, becuase during the discussion there are some students chatted with other which the topic is out of the given material from LKS.
3. Teacher have not optimal in giving direction to the students especially in directing of using LKS, there are some group which do not fill all of the answer which part of instruction and or direction of LKS.
4. Teacher have not created a good interaction for students, it can be seen from some students which not confident while asked to ask about the materialw which do not understood, and when teacher asked to come to the front to give presentation of the result of the discussion

The implementation of cycle 1 still lack so that need to be improved on the cycle 2. In the cycle 2 it imporved, as follow:

1. Teacher explained the model learning which implemented before on the cycle 1 which have been delivered. Teacher do emphasize the main topic which have been learnt to the next meeting. There is one-point observation which have been delivered which is teacher do not give exercise in the end of the meeting.
2. Overall, the group discussion has involved all of the member in learn and do the LKS and given exercise so that the students' interaction run well.
3. Teacher give direction to the student especially in direct using the LKS, every group able to finish the exercise easily on the LKS.
4. Teacher have make a good interaction, it can be seen from the confident of the students when asked to give question about the material which do not understoos, and while asked to come to the front to give precentation of the discussion result.

CONCLUSION

Based on the result of the research and the discussion of classroom aciton research, it can be concluded that the mathematics learning process through *Problem Based Learning* (PBL) model may improve the students' mathematics achievement of class VII A of SMP Negeri 2 Godean. In order to pick the material which used *Problem Based Learning* (PBL) model it better to related it with familiar fact so that the implementation through problem may be found in the daily life and make it easy to be understood by the student. Through *Problem Based Learning* (PBL) model is expected have interaction and those interactions to discuss the learning material so that it is needed to have optimal supervise.

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