



Increased Motivation and Student Outcomes Through Problem Based Learning (PBL) in Mathematics Learning

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ABSTRACT

Keywords:

Problem Based Learning (PBL); Learning Motivation, learning outcomes

The material in mathematics learning is considered boring and monotonous. This proves that there are students who have not been able to reach the minimum success rate. Therefore, the purpose of this research is to know the increased motivation and learning outcomes of students through Problem Based Learning (PBL). This research is a class action research implemented over two cycles. Each cycle consists of planning, implementation, action, observation, and reflection phases. The research instruments used are observation sheets, tests, and polls. Data collection techniques using interviews and documentation. While data analysis uses qualitative and quantitative descriptive analysis techniques. The results of the action showed an increase in motivation and student learning outcomes through the implementation of a problem based learning (PBL). The student's learning motivation increased 75% well-endowed in cycle I increased to 87.5% which was very well-endowed in cycle II. While the results of learning in pre-action, the learners showed an average of 78.20 increased to 81.05 in cycle I, and increased to 88.50 in cycle II. The conclusion of this study is problem based learning (PBL) can significantly increase the motivation and learning outcomes of students.



Article History:

Received: 03-11-2019
Revised : 27-12-2019
Accepted: 29-12-2019
Online : 30-12-2019



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<https://doi.org/10.31764/ijeca.v2i3.2154>

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A. INTRODUCTION

Mathematical subjects with the material "compound occurrence opportunities" are felt difficult and tedious for students (Rangkuti, 2014). This can be proved by the learning atmosphere and many students who are sleepy during the learning process is running. Teaching is done by the teacher in one direction with only teachers who can serve as a source of learning this kind of thing that can influence the decline of motivation and quality of the learning process of students (Wepe, Suratno, & Wahono, 2016). Many teachers are still teaching teacher centers rather than students ' learning centers. Teacher-centered learning still emphasizes textbook-based learning or material, student knowledge is only limited to what is written in the book and what the teacher describes (Oktiani, 2017). So the aspect that can develop is limited to cognitive aspects. Learning is a teacher centre usually realized through lecture methods. The lecture method is not not well used in conveying the material, but there are weaknesses that other learning models can overcome (Talajan, 2012).

In solving problems such learning needs to be attempted in the form of learning development. In the development of today's learning is innovative and creative learning (Rezki & Rivilla, 2017). Therefore, it is necessary to seek an innovative learning model that can increase the activity of self-motivating at all times during the learning process, so that students themselves are able to get the learning process that will be able to improve the learning outcomes and achievement of the minimal submission criteria (KKM) on each of the basic competencies (students are stated/graduated with a value of 70).

The problem based learning (PBL) Learning Model is one of the learning strategies used in the classroom to help you learn about each subject (Qomariyah, 2016). Especially in math subjects in learning problem based learning students work in small groups help each other learn each other (Fitriyani, Corebima, & Ibrohim, 2015). The group consists of students with high learning outcomes, averages and lows, men and women, students with different backgrounds in the classroom. These heterogeneous groups live together in several meetings and they can learn and work equally well as a team (Mandailina, Saddam, Ibrahim, & Syharuddin, 2019).

Researchers conducted early observations in class XII IPS 3 SMA Negeri 5 Mataram. First time while pre-action, class looks calm. But not infrequently become crowded when the atmosphere is not conducive. Researchers get preliminary findings regarding some of the problems in the classroom, such as:

1. There are some students who still seem passive like, Tidur-tiduran and do not pay attention to the teacher while teaching, because the material presented by the teacher is less attractive to the students ' interest and attention.
2. There are students who sleep in the classroom while the learning process is in progress.
3. Not all students notice when the teacher explains the teaching materials in front of the class, but the classroom atmosphere is calm, but the rest is not attentive.
4. There are some students who tell themselves with their friends.
5. Students feel saturated and impress bored in learning.
6. Teachers are less able to reach the whole class, because the teacher only describes in front of the class.
7. Teacher has never applied a model of cooperative learning of jigsaw type.

Based on the above identification, researchers with teachers reflected on the problems that were considered the most important and should be addressed immediately. Researchers and teachers agreed that the main problem of class XII IPS 3 was the low motivation to learn students about mathematical learning that could have an impact on their learning outcomes. Therefore, researchers with teachers plan to use a problem based learning model (PBL) to inspire their passion for mathematics learning. Learning problem based learning (PBL), it has many types, such as Student Team Achievement Division (STAD), Team Game Tournament (TGT), Group Investigation, Rotating Trio Exchange, Group Resume. Based on the issue gained from the pre-action stage. Therefore, the purpose of this class action research is to improve the motivation and learning outcomes of students through learning problem based learning (PBL).

B. METHODS

This research was conducted at SMA Negeri 5 Mataram. The subject of this study focuses on students of grade XII IPS-3 SMA Negeri 5 Mataram which consist of 32 students. The research approach used is class action research (PTK). Class action research is a systematic study of the

efforts to improve the implementation of educational practices by a group of teachers in conducting actions in learning, based on their reflection on the outcome of these actions (Wirani, 2018).

The data collection techniques used by researchers are classified as two, namely: Key data collection techniques by observation or observation, tests and motivational polls conducted per cycle. Then help data collection techniques with and conducting interviews and documentation.

Data validity test techniques are done by testing or tryout against the problem and the motivation to learn the intent and purpose of the author held a tryout poll and the question of this test is to avoid meaningful questions double and unclear, avoiding unnecessary questions, avoiding words that are poorly understood by the respondent, eliminating those items that are deemed irrelevant to the research.

The data analysis techniques used in this study are quantitative and qualitative data analysis techniques. In qualitative techniques data analysis is done by observing and comparing the process of learning activities conducted by teachers and students when using the method of problem based learning (PBL), on each cycle. This is done to get the data used for improvement in the next cycle. In quantitative techniques, data analysis was conducted by comparing the increased motivation and student learning outcomes at each cycle i.e. the student's motivational score, the average grade grades and also the value of student learning outcomes presented in the form of tables or drawings.

C. RESULT AND DISCUSSION

1. Data Description of Cycle I

Execution of cycle action I according to the plan is executed for 2 times meeting. The meeting was held for 4 x 45 minutes, using the method of problem based learning (PBL), according to the steps set out in the Learning Implementation Plan (RPP). The material used in the implementation of this first cycle action is about the "chance of a compound event". After completing two meetings in the first cycle, researchers and teachers collaborate on collecting data on the outcome of students' evaluations in the I cycle. The achievement of motivational learning motivation can be seen in Table 1 below:

Table 1. Targets and motivation cycle I achievement

Aspects	Cycle I	
	Target (%)	Result (%)
Learning Motivation	85	70,50

Based on the analysis of the motivational poll study on cycle I, it is known that as many as 70.50% of students for the motivation to learn are good, and 37.35% of students have motivated learning well enough. Although the majority of students in cycle I motivation to study in good quality, but still have not fulfilled the determined target, which is 80% of the number of students with a well-predicted learning motivation. Then, the achievement of the students' cognitive learning outcomes can be seen in Table 2 below:

Table 2. Targets and motivation cycle I achievement

Aspects	Cycle I	
	Target (%)	Result (%)
Cognitive Outcomes	85	78,20

Based on the analysis of cognitive tests on cycle I, it is revealed that the number of learners reaches KKM 75 reaches 24 students or as many as 80% of students and only 6 students or as many as 20% of students who still get scores under the limit of Minimal submission criteria (KKM) with an average value in cycle I i.e. 78.20

2. Data Description of Cycle II

On the implementation of Action II, based on the results of action planning that has been compiled implemented during 2 meetings. Each meeting is held for 2 x 45 minutes, according to the planning of action. The material used in the implementation of the II cycle action is about the "conditional incidence odds" which are the sub-topics of the compound opportunity material.

After completing two meetings in the second cycle, teachers and researchers gather data on the outcome of students' evaluation in cycle II. The achievement of motivation to learn good learners can be seen in Table 3 below:

Table 3. Targets and motivation cycle II achievement

Aspects	Cycle II	
	Target (%)	Result (%)
Learning Motivation	85	87,50

Based on the analysis of the motivational poll study on cycle II, it was said that as many as 87.50% of Grade XII IPS-3 SMA Negeri 5 Mataram Motivated the motivation to learn good, and only 18.50% of students motivation for learning is good enough. In the II cycle it is known that the number of learners whose motivation to learn is well-established is increased from the I cycle. With this, the percentage of motivational achievement studied XII IPS-3 in Cycle II has reached a specified target of 80%. Then, the achievement of a student's cognitive learning basil can be seen in Table 4 below:

Table 4. Targets and motivation cycle II achievement

Aspects	Cycle II	
	Target (%)	Result (%)
Cognitive Outcomes	85	88,50

Based on the analysis of cognitive tests on cycle II, it is known that the number of learners reaches KKM 80 reaches 28 students or as many as 88.50% of students and only 4 students or as many as 15.35% of students who still get value under the limit of the minimum submission criteria (KKM) with an average value in the II cycle of 88.50.

From the above exposure in general, the achievement of students' learning outcomes from the pre-action stage, Cycle I, to the II cycle has increased. This can be seen from the average value of the students grade XII IPS3 SMA Negeri 5 Mataram on each cycle. Although the average grade students' grades of each cycle is increasing, there are still learners who have not yet received the expected learning outcomes. There are a number of learners who on a pre-cycle got a high score but then dropped on the I cycle but again climbed in cycle II. In fact, there are learners who experience a decrease in the value of cycle I to cycle II. This indicates that the model of problem-based learning (PBL) learning is not necessarily suitable for all learners with different learning characters. So it is important for teachers to be able to develop more innovative and creative learning in hopes of helping learners to meet their learning needs.

Based on the explanation of data that has been presented can be concluded that the application of model learning problem based learning (PBL), can improve the motivation and learning outcomes of the students of Class XII IPS-3 SMA Negeri 5 Mataram on mathematical subjects.

D. CONCLUSION AND SUGGESTIONS

Based on the results of the class action research that has been done with the implementation of a problem based learning model (PBL), it can be concluded that: (1) Implementation of the problem based learning (PBL) learning model can improve learning motivation and student learning outcomes in mathematics lessons. This is seen from the results of the treatment that has been done a significant increase in both the results of learning motivation and test results as an evaluation of the ability of students.

Furthermore, researchers convey to teachers, should teachers apply various learning models that are creative, varied, innovative and in accordance with the material, so learning is more conducive, attracting students to study, and making it easier for students to understand the material and students do not feel the boredom during the learning process that ultimately students ' learning outcomes are satisfactory and can improve. Also, should the learning activities of teachers should be more able to manage the class. In this case, the teacher must be strict to the learner if there are learners who do not pay attention during the learning activities

REFERENCES

- Fitriyani, R., Corebima, A., & Ibrohim, I. (2015). Pengaruh Strategi Pembelajaran Problem Based Learning dan Inkuiri Terbimbing Terhadap Keterampilan Metakognitif, Berpikir Kritis, dan Hasil Belajar Kognitif Siswa SMA. *JPS (Jurnal Pendidikan Sains)*, 3(4), 186–200. <https://doi.org/10.17977/jps.v3i4.8170>
- Mandailina, V., Saddam, S., Ibrahim, M., & Syaharuddin, S. (2019). UTAUT: Analysis of Usage Level of Android Applications as Learning Media in Indonesian Educational Institutions. *IJECA (International Journal of Education and Curriculum Application)*, 2(3), 16. <https://doi.org/10.31764/ijeca.v2i3.2080>
- Oktiani, I. (2017). Kreativitas Guru dalam Meningkatkan Motivasi Belajar Peserta Didik. *Jurnal Kependidikan*, 5(2), 216–232. <https://doi.org/10.24090/jk.v5i2.1939>
- Qomariyah, E. N. (2016). Pengaruh Problem Based Learning terhadap Kemampuan Berpikir Kritis IPS. *Jurnal Pendidikan Dan Pembelajaran*, 23(2), 132–141.
- Rangkuti, A. N. (2014). Tantangan dan Peluang Pembelajaran Matematika. *Jurnal Pendidikan Matematika*, II(01), 1–13.
- Rezka, M., & Rivilla, S. R. (2017). Kreativitas Guru Matematika Kelas Viii Dalam Pembelajaran Matematika Di Mtsn Model Martapura. *Jurnal Pendidikan Matematika*, 2(1), 81. <https://doi.org/10.18592/jpm.v2i1.1169>
- Talajan, G. (2012). Menumbuhkan Kreativitas dan Prestasi Guru. In *Menumbuhkan Kreativitas dan Prestasi Guru* (p. 169).
- Wepe, S., Suratno, S., & Wahono, B. (2016). Pengaruh Model Pembelajaran Kooperatif Tipe Artikulasi dengan Peta Konsep terhadap Motivasi dan Hasil Belajar IPA-Biologi Siswa (Pokok Bahasan Ekosistem Kelas VII SMPN 11 Jember Tahun Pelajaran 2015/2016). *Jurnal Edukasi*, 3(2), 13. <https://doi.org/10.19184/jukasi.v3i2.3523>
- Wirani, E. W. (2018). Penelitian Kuantitatif, Kualitatif dan Penelitian Tindakan Kelas. In *Penelitian Kuantitatif, Kualitatif dan Penelitian Tindakan Kelas*.