

Improving Students' Learning Achievement Using the Problem-Based Learning (PBL) Model with a Culturally Responsive Teaching (CRT) Approach

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ABSTRACT

The purpose of this class action research is to improve the learning achievement of X DKV 2 students at SMK Negeri 2 Madiun by applying the Problem Based Learning (PBL) learning model and Culturally Responsive Teaching (CRT) approach. The subjects in this study were 31 students of class X DKV 2 SMK Negeri 2 Madiun. The instrument used in the form of multiple choice test questions to collect data on student learning achievement in mathematics subjects. This research was carried out in 2 cycles, each cycle consisting of four stages, namely planning, implementation, observation, and reflection. The results obtained after data analysis were the increase in student learning achievement with an average score in cycle 1 of 79.35 and cycle 2 of 85.81. The classical completeness of the two cycles also increased and met the success indicator set which is more than or equal to 80%. The classical completeness in cycle 1 was 74.19% and in cycle 2 was 87.10%.

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1. INTRODUCTION

Education is actually a very important aspect to improve the quality of human resources. Therefore, it is necessary to make various efforts to improve student learning achievement. One of the efforts that can be made is to use a learning model that is effective and responsive to the needs of students. The *Problem Based Learning* (PBL) Learning Model can be one of the learning models that can be used in an effort to improve student learning achievement. However, to support the effectiveness of using this learning model, it is necessary to implement an approach that is responsive to the needs of students, namely by using the *Culturally Responsive Teaching* (CRT) approach.

Mathematics is one of the many subjects in schools that play a very important role in human life. Mathematics plays a very important role in daily life, such as measurement, financial management, calculating opportunities, etc. Therefore, mathematics has been taught from an early age to college (Afrianti dkk., 2024). However, the importance of learning mathematics is not comparable to the reality

where students still consider it a very difficult subject and not a few do not like it. This is what makes the achievement in mathematics lessons low when compared to other subjects.

Based on the results of observations and interviews with mathematics teachers at SMK Negeri 2 Madiun, it shows that there are still many students in class X DKV 2 who have mathematics learning achievements below the expected standards. Some of the factors that cause the low learning achievement are such as students' interest and motivation for mathematics learning that is very lacking. The lack of interest in learning mathematics can be seen through their activeness during the learning process. Many students still look less active in the learning process. This can be shown such as students who do not dare to ask questions, are not confident to express opinions, and many students chat when the teacher is explaining. As a result, the material delivered by teachers cannot be absorbed properly and has an impact on students' learning achievement is still below standard.

The emergence of problems that occur in these students may be due to the selection of learning models and approaches that are not enough to facilitate students' understanding and interest at the time of learning. In this case, learning planning is very crucial for a teacher in creating learning activities that can comprehensively facilitate the needs of students. The use of learning models that can accommodate and have the potential to improve student learning achievement needs to be done as a teacher (Djamaluddin, 2018). In addition to choosing the right learning model, the learning approach is also one of the factors that affect student learning achievement and supports success in learning activities (Rokhman dkk., 2024). To be able to increase students' interest in learning in class X DKV 2 SMK Negeri 2 Madiun, a learning model and approach is needed that can activate activities and accommodate the needs of students. One of them is by applying *the Problem Based Learning* learning model combined with *the Culturally Responsive Teaching* approach.

Problem-Based Learning is a learning process that departs from various ideas and builds an understanding of the ideas that students already have (Widayanti & Nur' aini, 2020). Furthermore, Duch stated that the *Problem Based Learning* learning model is a learning model characterized by real problems as a context in critical thinking for students and honing skills in problem solving and acquiring knowledge (Rahmawati dkk., 2020). The purpose of this learning model is to challenge students to be able to ask problems and solve more complicated problems so that they can enable students to express their opinions, work together in groups, foster a spirit of leadership and develop students' analytical skills (Rahmat, 2018). In learning activities with this learning model, the teacher only acts as a facilitator who is tasked with directing the understanding gained by students.

Culturally Responsive Teaching is an approach that uses different performance styles, cultural knowledge, and student experiences to create meaningful learning experiences (Gay dalam Rokhman dkk., 2024). So that this approach can maintain cultural identity and respect the differences between other students (Rahmawati, 2018). The learning process is expected to improve students' learning achievement and provide a relevant and meaningful experience by integrating cultural backgrounds.

Based on the description above, the researcher felt the need to conduct a study that aimed to improve the learning achievement of students in class X DKV 2 SMK Negeri 2 Madiun by using the *Problem Based Learning* (PBL) learning model and *the Culturally Responsive Teaching* (CRT) approach.

2. METHODS

The research method used in this study is classroom action research (PTK) which aims to determine the development in improving student learning achievement in class X DKV 2 SMK Negeri 2 Madiun by using the *Problem Based Learning* (PBL) learning model and *the Culturally Responsive Teaching* (CRT) approach. According to Suharsimi Arikunto in (Ritonga dkk., 2021) Classroom action research is a scrutiny of learning activities in the form of actions that are deliberately raised and occur

in a classroom at the same time. Meanwhile, according to (Rahmawati dkk., 2020) classroom action research is research conducted by teachers as a means of self-reflection with the aim of improving the quality of the learning process in the classroom so that it can improve student learning outcomes.

This research was carried out at SMK Negeri 2 Madiun which is located at Jl. MT Haryono No. 18, Selo, Mojorejo, Kec. The subjects of this study are students of class X DKV 2 consisting of 31 students, with 17 male students and 14 female students. The research instruments used in this study are multiple-choice test questions to collect data on student learning achievement using the PBL learning model and the CRT approach in mathematics lessons. Furthermore, the data was analyzed in a qualitative descriptive manner to provide the results obtained in this study. The research was carried out in collaboration with mathematics teachers who acted as observers.

The success indicator in this study is the increase in student learning achievement in mathematics lessons that reach the Minimum Completeness Criterion (KKM) 75 and classical completeness is more than or equal to 80% of students achieving the KKM that has been set. The design of this stage of research refers to Kemmis & Mc Taggart as described by Arikunto in (Widayanti & Nur' aini, 2020) Where each cycle consists of four stages, namely planning, implementation, observation or observation, and reflection.

3. FINDINGS AND DISCUSSION

This research was carried out in 2 cycles consisting of four stages, namely planning, implementation, observation, and reflection. Each cycle is carried out with 3 meetings consisting of 2 meetings for the implementation of learning and 1 meeting for the final test of the cycle. Each cycle uses a different sub chapter but stays within the same chapter. Data related to the achievement of learning achievement of students in class X DKV 2 SMK Negeri 2 Madiun from pre-cycle, cycle 1, and cycle 2 are presented in table 1.

Table 1. Completion of Student Learning Achievement in Precycle, Cycle 1, and Cycle 2

No.	Cycle	Number of Students		Classical Completeness Percentage
		Complete	Incomplete	
1.	Precycle	18	13	58,06%
2.	Cycle 1	23	8	74,19%
3.	Cycle 2	27	4	87,10%

Based on the graph above, it shows that the number of students who achieved the completeness score of KKM (≥ 75) has increased. The following is data related to the average score of students in class X DKV 2 SMK Negeri 2 Madiun from the pre-cycle, cycle 1, and cycle 2.

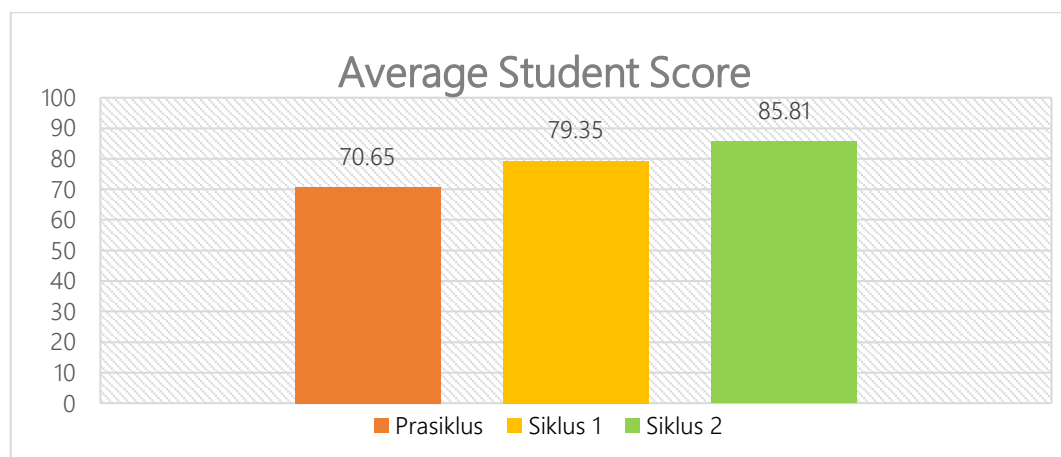


Figure 1. Average Student Score

Precycle

Based on the results of data analysis in the preliminary data, it shows that there are 18 students who have reached the KKM and 13 students who have not reached the KKM. The average score of students in class X DKV 2 in the pre-cycle was 70.65 with classical completion still at 58.06%. This is the basis for the researcher to conduct research on class X students of DKV 2 SMK Negeri 2 Madiun using the *Problem Based Learning* learning model and the *Culturally Responsive Teaching* approach.

Cycle 1

The implementation of research in cycle 1 was carried out in 3 meetings with 2 meetings for the implementation of learning activities and 1 meeting for the implementation of the final test. Before cycle 1 is implemented, the researcher conducts planning which begins by analyzing the CP and the material to be taught. Then prepare the teaching module according to the results of the CP analysis and the material taught using the *Problem Based Learning* (PBL) learning model and the *Culturally Responsive Teaching* (CRT) approach. Furthermore, they prepare learning tools in the form of teaching materials, student worksheets, and assessment instruments. The sub-chapter taught in cycle 1 is the measure of data concentration consisting of mean, median, and mode of single data and group data.

During the implementation of cycle 1, student learning activities increased even though only slightly. Some students began to look active to participate in learning activities with group discussion activities. However, the presentation activity was not fully optimal because only a few students with high abilities dared to convey the results of the group work and there were some students who were still shy to express their opinions. Not all groups seem to be active in the discussion, so there are still students who only rely on friends from their group to do the assignments given. After the learning activities were carried out twice, the final test for the first cycle was carried out.

Based on the results of data analysis that has been obtained in cycle 1, it shows that there has been an increase in the average score of students in class X DKV 2 to 79.35. Students who managed to achieve KKM also increased when compared to the precycle, which was 23 students with classical completeness reaching 74.19%. The conclusion obtained from the implementation of cycle 1 is that it has achieved success in accordance with the achievement indicators where the average grade of the class is 79.35. However, the results of the classic completion still did not reach the target of 74.19%. In accordance with these results, the research was continued in cycle 2 with several refinements and revisions. The improvements and revisions made include preparing more varied learning media, rearranging groups, monitoring specifically and more intensively for students with disabilities, and encouraging all students to be more active in learning activities both in individual learning and group discussions.

Cycle 2

The implementation of research in cycle 2 is the same as the implementation in cycle 1 which is carried out 3 times. The sub-chapter taught in cycle 2 is the size of data placement consisting of quartiles, deciles, and representatives of single data and group data. During the implementation of cycle 2, there were several advances both in student activities and in the grades obtained by students. Progress in student activities includes that most students are seen to be active during the learning process, more confident to convey the difficulties they face, and group rearrangement can provide more free opportunities for students to discuss. After the end of cycle 2, the next step is to analyze student learning achievement data.

Based on the results of data analysis obtained in cycle 2, it shows that the average student score is 85.81. There was an increase in the number of students who managed to achieve KKM, namely 27 students with classical completeness of 87.10%. The results obtained in cycle 2 have achieved success in accordance with the achievement indicators of both grade average and classical completeness. The success of this research is certainly thanks to the application of *the Problem Based Learning*, learning model and *the Culturally Responsive Teaching* approach. *The Problem Based Learning*, learning model can allow students to be directly involved in learning activities. This is in line with the opinion Lahaube et al. (2023) which includes *the Problem Based Learning* learning model can improve student understanding by presenting problems and encouraging discussions with their peers. In this study, it is shown that learning activities with *the Problem Based Learning*, learning model have been carried out well with the results of data analysis showing that there is an increase in student learning achievement outcomes. This is in line with research conducted by Wahyuningsih et al. (2023) that learning using the *Problem Based Learning* model and *the Culturally Responsive Teaching* approach can improve student achievement and classical completeness in each cycle. In cycles 1 and 2 in this study, the average grade point average and classical completeness showed that the use of *the Problem Based Learning*, learning model and *the Culturally Responsive Teaching* approach could improve the learning achievement of class X DKV 2 students at SMK Negeri 2 Madiun.

4. CONCLUSION

Based on the discussion and research results, it can be concluded that the application of *the Problem Based Learning* (PBL) learning model and *the Culturally Responsive Teaching* (CRT) approach can improve the mathematics learning achievement of students in grade X DKV 2 SMK Negeri 2 Madiun. This is evidenced by the increase in the number of students who managed to achieve KKM, namely 23 students with an average score of 79.35 and classical completeness of 74.19% in cycle 1 (an increase of 16.13% from the pre-program). Likewise, in cycle 2, there was an increase in the number of students who managed to achieve KKM, namely 27 students with an average score of 85.81 and classical completeness of 87.10% in cycle 2 (an increase of 29.04% from the pre-cycle and 12.91% from cycle 1). The application of *the Problem Based Learning*, learning model and *the Culturally Responsive Teaching* approach is one of the alternatives for teachers to provide variety in learning activities. *The Problem Based Learning*, learning model can provide a space for students to actively participate in learning activities through group discussions, problem-solving, and presentations. In addition, by choosing the *Culturally Responsive Teaching* approach, students can feel close and relevant because of the presence of various elements in daily life that are integrated into the learning material. With this learning variety, it can make students feel a more fun and challenging learning atmosphere so that it can increase motivation, learning interest, and student participation in learning activities.

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