

Increasing Student Interests Through the PjBL Model for Learning Mathematics in the Material of Cube Nets in Grade 5 SDN 8 Wanarejan

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ABSTRACT: One way that can be done to make learning fun and not boring is to apply a variety of learning models. Teachers need to choose a learning model that fits the material, fits the characteristics of the students, and uses projects/activities as media. The learning model in question is the Project Based Learning or project-based learning. In this study, researchers used a classroom action research method. In the core activities students explain how they will carry out learning activities. Begin to be introduced by dividing the group into 3 groups with 5-6 students as members. Then they were explained about class roaming so they explored each existing post. In this study there are 5 posts that are in accordance with the project based learning (PjBL) syntax. Based on the results of the research that has been carried out, it shows that learning using the learning model (PjBL) gets a good response from students. This is evidenced by the students' answers to the response questionnaire given. Most of the students, namely 86%, chose to strongly agree to the response questionnaire given. Results of students' responses to grade 5 learning with KD 3.7 Explaining and finding simple geometric nets (cubes and blocks), 4.6 Making simple geometric nets (cubes and blocks)

Keywords : Project Based Learning, teacher, learning

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INTRODUCTION

Education is a way of interaction between teachers/educational staff and students/students in learning activities. Education is a process of improving human quality so that it can be beneficial not only for himself, but also for the surrounding environment. Education does not only provide provisions in the form of intellectual understanding in arithmetic, reading and writing, but also develops students' abilities in social, intellectual and personal aspects (Taufiq in Fauzia, 2018). As the main pillar in providing knowledge and giving birth to an intellectual and moral young generation, teachers can realize this by creating effective learning. The interactions that occur between teachers and students, students and fellow students, as well as students and learning resources are called effective learning.

However, most teachers still adhere to conventional teaching methods, namely lectures. It is this conventional way of teaching that causes learning devoted to mathematics to not run optimally. Conventional teaching methods, in this case lectures, result in the teacher learning process being more dominant and students having no role during the learning process. Opportunities for students to express their understanding are very limited during the learning process. The use of the lecture method makes learning activities boring. Besides being boring, the lecture method also causes students to become bored and passive. This has an impact on reducing the desire of students in mathematics.

Understanding the concept is the key in learning mathematics. The requirement for students to accept and understand new concepts easily is by understanding the concepts in the previous material.

However, with the use of the lecture method which is still used by most teachers, it makes it difficult for students to understand the material. As a result, learning outcomes are not optimal and learning mastery is not achieved due to students' lack of understanding of the material presented (Kamarianto, Noviana, Alpusari in Fauzia, 2018). Therefore, it is necessary to hold an evaluation and improvement to overcome these problems. Teachers are obliged to foster students' interest in learning, especially in mathematics, by creating a learning atmosphere that is not boring and in accordance with student characteristics.

One way that can be done to make learning fun and not boring is to apply a variety of learning models. Teachers need to choose learning models that are appropriate to the material, according to the characteristics of students, and use projects/activities as media. The learning model in question is the Project Based Learning learning model or project-based learning.

Project Based Learning (PjBL) can be interpreted as a learning model where teachers have the opportunity to be able to manage learning in the classroom by involving project-based work (Wena in Azizah, 2019). Cord also explained that Project Based Learning (PjBL) is an innovative learning model that focuses on learning through real life with complex activities (Sutirman, 2013:43). Project-based work contains complex tasks based on questions and problems (problems) which are very challenging and require students to be able to design, solve a problem, make decisions, investigate activities, students are given the opportunity to be able to work independently. Clegg in Wena (2011: 144) also explains that through project work, student creativity and motivation will increase.

From the several opinions that have been described, it can be concluded that Project Based Learning (PjBL) is a learning model that involves project work that focuses on contextual learning through complex activities and tasks and requires students to be able to design, solve a problem, make decisions, conducting an investigation of activities, students are given the opportunity to be able to work independently so that the creativity and motivation of students will increase.

The syntax for Project Based Learning is as follows: 1) Determine essential questions, 2) Plan projects to be worked on, 3) Arrange schedules, 4) Monitor project progress, 5) Assess work results, 6) Evaluate learning experiences. The Project Based Learning Learning Model has the following advantages: (1) developing the independence of students, (2) Students have responsibility for their own learning, (3) can develop students' skills in solving problems, (4) expanding the path of students to learn. The hypothesis formulated in this study is that the application of the Project Based Learning (PjBL) learning model can improve understanding of mathematics subject matter of cube nets for fifth grade elementary school mathematics

METHOD

The research used was classroom action research (PTK). In classroom action research there are four important stages, namely planning, action, observation and reflection. The classroom action research (PTK) process that the researchers carried out came from the teacher's anxiety in learning mathematics, where students experienced a decrease in interest in mathematics. This classroom action research (PTK) implementation model adapts from Kurt Lewin's model (in Arikunto, 2017:42). In essence, classroom action research (CAR) is a process when teachers want to improve learning practices to make them better. This research is used to improve learning activities in grade 5 with the aim of increasing students' interest through the project based learning (PjBL) model assisted by concrete media which will make the project into a net of cubes.

This study uses a class action research method (CAR) by using observation techniques for data collection. The data source studied was the 5th grade students at SDN Wanarejan Pemalang. The population is 150 students, while the sample is 16 students. The instruments used are in the form of tests and questionnaires, the tests used are in the form of project stages that have been planned. While the questionnaire contains student responses about project-based learning. Data analysis was carried out through a study of the results of observations of learning activities and student activities on observation sheets and assessment of test results. The data analysis step is by grouping the observed aspects, namely planning, implementing, and student activities when learning takes place, analyzing the implementation of each aspect of observation at each point, evaluating student learning outcomes, and reflecting on the results of observations.

RESULT AND DISCUSSION

This action research was carried out on November 3, 2022. The observation was carried out before the action was carried out, namely on October 18, 2022. From the results of observations made by researchers on October 29, 2022. Based on the results of the research that has been carried out, it shows that learning using the project based learning (PjBL) learning model gets a good response from students. This is evidenced by the answers of students in the response questionnaire given. Most of the students, namely 86%, chose to strongly agree to the response questionnaire given. Results of students' responses to grade 5 learning with KD 3.7 Explaining and finding simple geometric nets (cubes and blocks), 4.6 Making simple geometric nets (cubes and blocks).

Planning Stage

Learning in the first cycle starts from the stages of planning, implementing, observing and reflecting. At the planning stage, the activities carried out were collaborating between the researcher and the class teacher to determine the day and time for the learning activities to be carried out, the time for conducting feedback discussions, and formulating indicators of achievement in research. The next plan is to determine the steps that need to be considered in improving skills think students through the project based learning (PjBL) learning model assisted by concrete materials, namely manila paper which students will make projects. Researchers and class teachers also develop learning implementation plans (RPP) that are adapted to the learning syntax of project based learning (PjBL) models assisted by concrete materials to improve students' critical thinking skills.

Description and Implementation of Observations

Before conducting research. Researchers interviewed grade 5 teachers at SDN 8 Wanarejan. And the results obtained were that during the learning of mathematics in elementary schools it had decreased due to online learning which was carried out from 2020 to 2022. Students became weak in processing learning, especially mathematics where students were more afraid before doing learning, they thought that mathematics confusing and cannot be done easily, therefore the researcher helps the class teacher to solve the problem by applying the project based learning (PjBL) model in mathematics, especially the material for netting cubes.

The research was carried out on Thursday, 3 November 2022. The implementation of learning activities using the project based learning (PjBL) learning model with the help of concrete materials was carried out through 3 stages, namely starting with initial or preliminary activities, core activities, and closing. In the initial activities carried out as an introduction to learning in general, but before that the researcher introduced himself first to get to know the students better. In the core activities students are explained how they will carry out learning activities. Begin to be introduced by dividing the group into 3 groups with 5-6 students as members. Then they were explained about class roaming so they explored each existing post. In this study there are 5 posts that are in accordance with the project based learning (PjBL) syntax with the following details for each post.

POS 1

Ardi bought 1 pack of candies, put the tissue in post 1. To prevent it from being scattered, Ardi wanted to put the candies in a box. It turned out that at home there was no box for candy in the pack. Ardi thought of making a box to store the candy. Can you help Ardi make a candy box that can hold the candy? Don't forget to calculate the surface area of your candies!

POS 2

Discuss with your group how to solve the problem! After that, discuss the division of tasks. As an inspiration to solve problems, students can watch learning videos.

POS 3

Schedule a working time with group members. Don't forget the time limit.

POS 4

Please make a project to solve the problem according to the working time. Record the stages of making a project and discuss problems encountered with friends and teachers.

POS 5

Discuss the results of the project that has been made in front of the class.

After they carry out the tasks of each post, students can start projects that they plan on their own with their group members.

Learning Analysis and Reflection

Based on the results of observations on the learning activities, it can be concluded that the completion of the projects prepared by the students was considered good because they managed to make boxes for Ardi's candy. Even so, the researcher and the class teacher continued to carry out reciprocal discussions to assess the learning activities that had been carried out. The results of the mutual discussion are as follows:

1. Learning using the project based learning (PjBL) model with concrete media has shown improvement in a better direction compared to the results of interviews that have been carried out previously. This is evidenced by the enthusiasm of all students who made them more active and enthusiastic through postal roaming activities. Learning takes place in two directions and is centered on the learner.
2. The results of implementing the project based learning (PjBL) model with concrete media showed good results. This is shown from the results of the projects they did and how they presented their results in front of the class. They are also more daring to show their courage in presenting the projects they have made. Their confidence when presenting in front of the class proves that learning with a project based learning (PjBL) model with concrete media makes students active in learning activities.
3. Judging from the results of the projects they have completed, students are skilled in preparing projects, able to analyze an existing problem properly. Students are also able to dare to present the results of their projects. They succeeded in analyzing the problems given, designing what they would do, working on projects, presenting and ending with reflections on the day's learning.
4. Based on a questionnaire regarding the application of the project based learning (PjBL) model given to students, the response given by students to the application of this learning was very good. They can develop creativity based on the problems given. Starting from planning, execution, until reflection is well done. Therefore, it can be said that the implementation of project based learning (PjBL) in this class has been carried out well. The research results are presented in the following table.

Table 1. Student Response Questionnaire Results

No	Question	Number of student answers		
		SS	S	TS
1	I'm planning a project	16		
2	I dug up information in the form of learning videos from the internet as project-building literature	16		
3	I like math lessons using the PjBL learning model that has been implemented	11	5	
4	Learning mathematics using the PjBL learning model provides an opportunity to be able to understand the material better than learning mathematics before	16		
5	Learning mathematics using the PjBL learning model makes learning more active and not boring	11	5	
6	The teacher plays a big role by helping difficulties when working on projects	16		
7	This project assignment made me more creative.	11	5	
8	I like to discuss with my group during math lessons	16		
9	Discussing with group members made me understand the material taught better and it was easier to work on projects	11	5	
10	When learning takes place the class atmosphere is more pleasant	16		

Based on the results of the students' answers in point one, it can be proven that all students strongly agree in planning the projects they make. Students in groups can manage and organize group members to divide the division of tasks and they can plan project activities that they will carry out together (Lestari &SB. Nugraheti, 2022). At point two all students strongly agree to collect information from learning videos to be used as project literature (Saprilia, 2022). They were very enthusiastic when learning using learning video media, they enthusiastically recorded various information from the learning videos (Indriani, 2022). The third point is the number of students who really like mathematics using the PjBL model are 11 students, while those who like the PjBL learning model are 5 students. This is proof that students really like the application of mathematics learning with the Project Based Learning (PjBL) model (Wati, 2022). On the fourth point, all students strongly agree that learning with the PjBL model gives me the opportunity to understand the material better. On the fifth point, 11 students strongly agreed that the PjBL learning model invited students to be more active in learning, while 5 students chose to agree. On the sixth point, all the rest stated that they strongly agreed that the teacher really helped me when I had difficulties doing projects (Anggraini & Antosa, 2022). On the seventh point, a total of 11 students stated that they strongly agreed that project assignments made them more creative, while the remaining 5 students chose to agree. On the eighth point, all students agree in a statement that they are happy if during learning mathematics there is a discussion with group mates. Furthermore, on the ninth point, a total of 11 students stated that they strongly agreed that discussing and studying with group mates made me understand the material better and it was easier to work on projects, while the remaining 5 students chose to agree with this statement. The last point is that all students agree that the class atmosphere is fun when learning takes place

CONCLUSION

From the results of research conducted by researchers, it can be concluded that the application of the PjBL learning model to the material for cube nets for grade five at SD 8 Wanarejan has gone well. PjBL in this study was implemented by making posts adapted to the PjBL learning syntax. Students will carry out orders in accordance with the orders in the form of the story presented. After completing the posts, students presented the product in front of the class as a result of their work. The group that is the best at completing the project gets a reward as an appreciation for their hard work. After learning is complete, students fill out a response questionnaire on PjBL learning. As a result of their responses, most of the answers strongly agree with the statements provided. The application of PjBL in the material of cube nets in SD is very appropriate. Students are enthusiastic during the learning process, and the results of their learning are satisfying.

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