Implementation of PJBL Model-Based TPACK to Improve Students' Activeness in Angles Material

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1. ABSTRACT

This study aims to increase activity Study students through the PjBL model TPACK based on the material angle in Class III. The subjects of this classroom action research were 28 grade III students of one of the elementary schools in Bantul district students as subjects action recipients. This research is a collaborative classroom action research with method collection data consisting of interviews And sheet observation. This research is a classroom action research that applies the research design according to Kemmis and Robbin Mc Taggart with two cycles, each of which includes the stages of planning, implementing, observing, and reflecting. Classroom Action Research This is done in two cycles. The results of this study show that the use of the PjBL model TPACK based on the material angle in Class III can improve the liveliness of Study students in a material corner. Matter This can be seen from sheet observation assessment of aspects of activity learn. Average activity Study students experienced an increase, namely before action by 40 %, in the first cycle by 59 %, and in the second cycle by 82 %.
Keyword: *PjBL model based on TPACK and Activeness Study Student*

2. INTRODUCTION

Ideal learning is learning that can create a learning environment that encourages students to be active, creative, and think critically so that they can develop their maximum potential in various aspects of life. One of the aspects seen from ideal learning is the activeness of student learning. According to Susanto (2016, page 70), the learning process in class can be said to be effective if all students can be actively involved both mentally, physically, and socially. liveliness here is key how is the learning process that can be said to be ideal. Students, later _ will become part of society, of course, this cannot be without a process of cooperation between individuals. According to Apriono's explanation (2011, page 161), cooperative ability refers to the ability of several students to help each other, unite, have strong cohesiveness, and achieve common goals. A teacher is an actor who regulates the course of the learning process from opening the

lesson to closing the lesson. It is not enough for the teacher to only know the material being taught and how to teach it, the teacher must have knowledge as well as skills in determining models in learning. According to Rahayu, et al . (2020, page 115), learning is the interaction between teachers and students during the knowledge development process. The selection of a model that can create an active learning process is a key to success in classroom learning.

One of the learning models that can increase student learning activity is project-based learning. Learning-based project is part of learning active, deep learning students must participate actively in learning. Models used in learning This is the Project Based Learning (PjBL) model. According to Hosnan, (2016, p. 321) the PjBL model is a learning model that uses projects/activities as learning tools to achieve attitude, knowledge, and skill competencies. With the use of this project, students will be more active in the learning process. The use of this PjBL model can be combined with the Technological Pedagogical Content Knowledge (TPACK) approach. According to Rahmadi (2019, p. 71), TPACK is a type of new knowledge that teachers must master to be able to integrate technology properly into learning. Mishra and Koehler (2016, p. 12) discuss TPACK as a teacher's framework for integrating ICT into learning. Three important knowledge components that must be possessed as a teacher are mastery of subject matter under their qualifications and competencies included in the curriculum, pedagogy, and technology. By implementing TPACK in the learning process in the classroom it is hoped that students will be more interested and will be more active in every activity in the learning process. The implementation of mathematics learning in elementary schools is under the goals and scope of mathematics, but there are still problems. According to Sagala (in Sujana and Jayadinata, 2018, p. 145) the teacher's duty is to plan and carry out the learning process, assess learning outcomes, conduct guidance and practice conducting research and assessment, and open communication with the community Mathematics is not just numbers and calculations, mathematics is more of the. According to Akmil, et al. (2012, page 25) understanding concepts is very important for students in learning mathematics because mathematical concepts are related to each other so learning them must be coherent and continuous. For individuals who are already able to

think formally, mathematics can be very well received. However, this is not the same as the way elementary school children think. Because the age of elementary school children themselves is still in the stage of simple thinking.

However, based on field observations. There is one SD in the Bantul district during the learning process it is still lacking in terms of student activity. So that observations and interviews were carried out on Thursday the 13th April 20 23 in class III of the elementary school. Of the 28 students it is known that only 40% of learning angle material students are involved actively in learning and the rest are just passive. So that it can be concluded that many grade III students are still passive in learning in class, especially on angle material. Learning mathematics should be mastered by students because mathematics is needed in life every day. According to Ruseffendi (in Isrok'atun and Rosmala, 2018, page. 79) reveals that mathematics is a science that contains organized structures starting from undefined elements, to defined elements, to axioms or postulates, and ends with propositions. According to Dimyati and Mulyono (2013, page 45), knowledge is formed by each individual because the individual continues to interact with the surrounding environment which is always changing. So the learning process is really role important for understanding draft students. However fact in the field the learning process carried out by the teacher is still centered on the teacher and the lack of technological media used by the teacher, so that students are less interested and feel bored in the learning. You can say models learning Project-based Learning can become a solution. Teachers can apply the PjBL Model to classroom learning. Learning using the PjBL model can increase the learning activity of class III students, especially in the subject matter of Mathematics. Therefore, the purpose of this study is to apply the TPACK-based Project Based Learning model to increase student activity in the subject matter.

3. METHOD STUDY
3.1 Subject and Focus Study

Study This was conducted in class III of one of the elementary schools in Bantul Regency. There are 28 students in class III, consisting of 11 male students and 17 female students. The method used in this study is the Collaborative Classroom Action Research

(PTK-K) method. According to Hanifah, N. (2014, page 130) Classroom Action Research is research that is casuistic and contextual in the conditions, circumstances, and situations that exist in the classroom, which is carried out to solve problems that occur to improve the quality of learning in class. Focus study This is To increase liveliness Study students on the material corner by using the PjBL model TPACK based.

3.2 Instruments Study

This research is a study of Classroom Action Research Collaborative. According to Rasyimah and Sari (2022, page 24), This Collaborative PTK is also carried out by teachers who are involved in teamwork to reflect on the pedagogical practices being carried out. In the study, there are four stages, as formulated by Stephen Kemmis and Robbin Mc. Taggar t (in Hanifah, 2014, page 130) namely planning, implementation action, observation, and reflection. In collecting data, there are several kinds of data collection techniques, Arikunto (2015, p. 101) states that there are several kinds of data collection techniques, namely questionnaires, interviews, observations or observations, tests, and documentation. The instruments used in this study were interviews and observation sheets. According to Sanjaya (2012, page 86), Observation is a data collection technique by observing every ongoing event and recording it with an observation tool under the things to be observed or studied. Interviews are used to find out facts on the ground. While the observation sheet is used to measure the progress of student learning activeness in this study. Interviews were conducted with the class III teacher concerned and with class III students who had been randomly selected. The interviews revealed the initial conditions of learning, the model used by the teacher, and the teacher's point of view regarding the active learning of students in class. And on the observation sheet, six indicators can measure student learning activeness in class. The activeness indicators used in this study were paying attention to the teacher's explanation, asking questions, answering questions, completing assignments, paying attention to presentations, and recording material summaries. From each indicator, there is a score that can be used as a benchmark for observers. Here's a sheet observation liveliness Study student :

No	Name	The indicators assessed																						
		Paying attention to the teacher's explanation				Asking question				Answer the question				Completing Tasks				Pay Attention to Presentation				Recording Material Summary			
		4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
1																									
2																									
3																									
4																									
etc.																									

3.3 Data Analysis

Analysis was descriptive of the data carried out during each activity of observing the implementation of the cycle. Data processing is done using percentage techniques, and results processing is used to understand the trends that occur in learning activities. The analysis was carried out by calculating and presenting observational data obtained during the research to determine the increase in student learning activity. The results of the data analysis will be presented descriptively. This study uses qualitative data analysis techniques. Data descriptions are arranged in narrative, graphic, or table form. The observational data of this study can be seen from the scores on the sheet observation of student learning activeness. Observation data that has been obtained is calculated and then the percentage so that it can be seen to what extent the improvement achieved in learning. Assessment can be seen from the score results on the observation sheet student. Data results observation counted with the use of formula s as follows: (Isna Khoiriyatun . 2014,page34).

$$\text{Grade} = \frac{\sum \text{score obtained}}{\sum \text{max score}} \times 100\%$$

According to Indriani (2017, page 104), research can be said to be successful if it meets the research performance indicators, if the achievement of an increase can reach more than 75%, then the learning process is said to be successful. Therefore, this research targets 75% in success indicators to measure the activity of Study students. So that if indicator success is Not yet fulfilled, then they will be done cycle next.

4. RESULTS AND DISCUSSION

Study This was implemented in class III and implemented for 2JP. The material

contained in this study is a matter of angles. Angle material is found in learning theme 8 sub-themes 1. With KD 3.11, namely explaining angles, types of angles (right angles, acute angles, and obtuse angles), and non-standard units of measurement, and KD 4.11 identifying the types of angles (right angles, acute angles, and obtuse angles), and non-standard units of measurement. Implementation study action This held as many two cycles. Cycle I was held in two meetings and cycle II was held twice meeting. Before holding the study action class, a researcher does initial observation and a short interview with the class III teacher. Observation This is done To obtain information _ or a description beginning about the learning process of student class III.

Based on results observations in pre-cycle, students feel difficulty For understand eye lesson math. Matter This is because the learning process has not maxed, because of lack of liveliness Study student during the learning process. because during teacher learning only use the method ask answer and write material. And also deep implementation Teachers be l um maximizing media technology that can interesting attention students. So that students Still do not have enough believe self da l am put forward opinion. Media used by the teacher hasn't either based TPACK so that motivation And interest students to learning Still less. Student Also easily bored with learning Which monotone and no exists inviting games _ Students For active in learning.

After the implementation of a cycle I action with making project infographics and mind maps, the average activity is obtained for Study students by 59%. And in cycle II experienced enhancement by 23%, so the activity average Study student increase to 82%. The results experienced an increase of 42% in resulting observation initially for research. which factors affect the average increase in activity Study students are interested in learning and very enthusiastic For active in the game based on TPACK and existing projects in learning such, so they got motivated and excited follow learning math.

On aspect learning process in class using the PjBL model, criteria evaluation observation be measured through _ fifteen _ indicator. Based on Observations in cycle I show a percentage use of the PjBL model of 73.33%. With details at the meeting First showed a percentage of 70.00% and at the meeting, the second showed a percentage of 76.67%. So that can say to cycle First Not yet maximum in use of learning models

the. it _ because Lots of students haven't been used to learning models-based projects, so the teacher is more focused on guiding students and yet maximum in carrying out syntax use of these models. And on cycle second cycle II shows the percentage use of the PjBL model of 86.67%. With details at the meeting, the First showed a percentage of 85.00%, and at the meeting, the second showed a percentage of 88.33%. So that can be said in cycle II the use of the PjBL model dpada material corner Already worked. Following details percentages of every indicator:

No	Indicator	Results Cycle I (%)	Results Cycle II (%)
1	Notice explanation Teacher	61.00	84.00
2	Submit question	59.50	81.50
3	Answer question	57.50	83.00
4	Finish task	62.00	79.50
5	Notice presentation Friend	59.00	83.00
6	noted summary material	57.00	82.50
	Average liveliness student	**59%**	**82%**

5. CONCLUSION

Based on the results And discussion study so can conclude that the use of the PjBL model TPACK- based can increase the liveliness of Study students on the material corner. The use of the PjBL model-based TPACk also can provide fun and meaningful learning for students. In the observation of each meeting, in the average cycle, I p r e percentage of learning activity students is 59% In cycle II the average average percentage of activity Study students is 82 %. Average activity Study students increased by 23 % from cycle I to cycle II.

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