

The Utilization Of The Pjbl (Project-Based Learning) Model Can Effectively Enhance Students' Creativity

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Abstract: *This research focuses on improving and enhancing learning creativity by using the Project-Based Learning model. The study was conducted at Junior High School , using a collaborative classroom action research approach with two learning cycles consisting of two meetings each. The research follows the PTK structure, including planning, implementation, observation, and evaluation. The participants were 31 students from class VII/A, and the researchers used learning observation sheets, questionnaires, and learning assessment results for data collection. The findings from the questionnaire results, product assessment, and completeness of learning material percentage indicate an increase in creativity.*

keywords: project-based learning , creativity , and students.

INTRODUCTION

Today, education is considered to be the foundation for individuals who want to build their potential and characteristics on their own. Various strategies from different countries are competing to develop existing potential in their own countries. It all starts with one country, but it is not enough to move forward until the country is already advanced. In the past, many people were enthusiastic about acquiring skills and being creative on their own, even inventing new products or strategies to make work and activities easier. This still applies today and in the future. People should demonstrate their ability to adapt to changes and continue learning throughout their lives. Critical thinking and the ability to identify frequent problems proactively to create a solution and make decisions in uncertain contexts, as well as minimizing risks, are very influential and impactful in creating an ideal educational world (Castro-Lopes et al., 2021).

In Japan, a new era called Society 5.0 has begun, which involves the integration of technology and robotics into various community activities. This means that some tasks previously performed by humans will now be carried out by machines. In the previous era, Society 4.0, artificial intelligence was developed to the point where it can interact and answer questions. It's possible that in the future, AI will replace some human brainpower (Bernadetta Purba, 2021; Lawton et al., n.d.).

According to Lumsdaine (1995: 14), using imagination and exploring different ideas can lead to new possibilities. This includes building upon the ideas of others and the environment to create new connections, experiments, and meaningful results for oneself and the surrounding world, even on a global scale. This involves developing the ability to think openly and from multiple perspectives, in order to reach desired goals and bring more meaning to life. Conversely, feeling empty or having empty thoughts can lead to a sense of stagnation, as one is unable to take action. However, creativity is not a fixed trait; it is dynamic and influenced by a person's emotions, mindset, level of awareness, and other factors. (bara, 2019). And when we as created humans with various type advantages and disadvantages.

On the contrary, if we perceive that we are capable of doing something, then we will be able to do it. This means that if we trust ourselves, we will be able to accomplish anything. When it comes to creativity, the focus should be on the brain's working system. If the brain is working actively and optimally, then creativity will significantly increase. The left side of the brain is responsible for logicalizing and actualizing, while the right side is responsible for controlling humanism, which means controlling the truth of life for humans. (Chen & Yang, 2019; Loyens et al., 2023).

Essentially, a person who is equipped with the necessary materials or tools can facilitate the learning process, also known as teaching. This involves communication between the teacher and the students, with the teacher conveying existing materials prepared by educators. According to Law No. 20 of 2003, a teacher's duties extend beyond simply explaining or presenting material; they also have the responsibility of guiding and providing education to students, helping them become well-rounded individuals. The concept of humanizing education is crucial in this regard. Due to the fact that a teacher may have multiple students in their class, their responsibilities become heavier. As a result, new teachers need to approach their jobs with a professional attitude, which will allow them to provide better quality education to their students. (Fitriyani et al., 2021; Guo et al., 2020). The meaning of the word "professional" is not just limited to a teacher who imparts knowledge. Going back to the concept of education, it is about humanizing the learning process. This can be achieved through various ideas such as independent study, which was proposed by the renowned education figure Ki Hajar Dewantara. He had many thoughts on education, one of which was to provide comfort to the participants in the learning process. The teacher should guide the participants and not force them to learn in a particular way. This approach can be incorporated into the education system to make it more student-centered and focused on their needs, which is crucial in the 21st century. (Sari et al., 2018).

The Project Based Learning (PjBL) model is an additional way for students to gain knowledge and skills by solving real-world problems. This model helps students become problem solvers in their environment. PjBL has been recognized as an effective and efficient 21st-century learning model. Although it's new in this century, it's not a new pedagogical approach. It was first developed by David Snedden, who taught Science in a major agriculture class in America. Snedden was inspired by John Dewey's educational ideas, which emphasized the importance of students learning by doing, acting, and creating, rather than just listening to information provided by educators or teachers. The PjBL model is designed to help students apply their knowledge and skills to real-world situations (Yin & Huat, 2021). The PjBL was initially created and developed by David Snedden and later popularized by William Heard Kilpatrick, a student of John Dewey. In his 1918 article titled "The Project Method," Kilpatrick emphasized the need for purposeful activities that allow students to apply their existing and new knowledge in related situations. Students should be encouraged to engage in such activities to reinforce their learning (Chang & Lee, 2010; Lu, 2023).

Activities in the learning process can enhance skills, such as critical thinking, and one method is through Project Based Learning. According to a research article by Bio and Agustin (2016), Project Based Learning involves meaningful and contextual learning that prioritizes students and uses real-world problems to educate. This approach can help students become more creative and grow. Gunawan (2017) also suggests that Project Based Learning is suitable for science education, as it can help students develop self-efficacy and a strong attitude of trust in themselves when completing assignments given by the teacher (Permana et al., 2021).

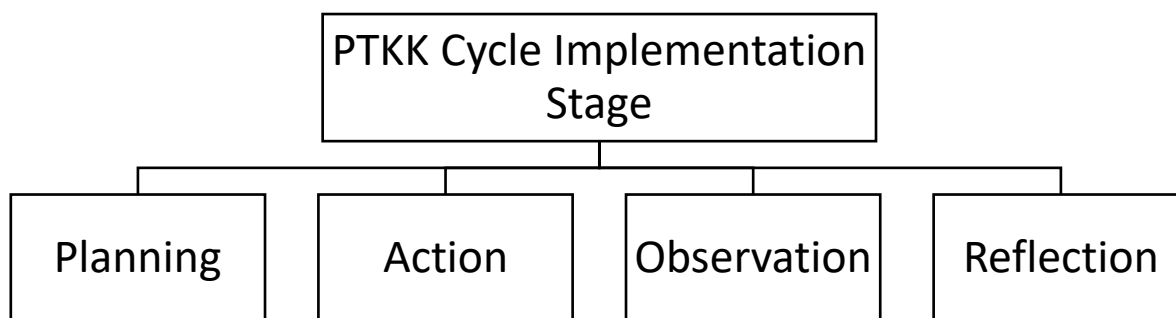
The Social Studies method is typically used for lecture discussions and similar activities. However, implementing the PjBL approach is expected to increase the creativity of participants and improve their education. The strongest focus of this study is on Project Based Learning and its potential benefits when applied in a Junior High School in Mojokerto district, Indonesia. The researcher aims to explore how this learning model can enhance the creativity of participants, providing them with meaningful education that improves their potential and characteristics (Bukhori et al., 2022; Triana Dewi Harizah et al., 2021). Giving meaning to learning involves not only teaching but also preparation, analysis, and evaluation of participant achievements and characteristics (Hayati et al., 2019; Muhajir Pendidikan Biologi et al., 2022).

METHOD

To aid researchers in their studies, a collaborative action class called has been established. This involves researchers and a teacher working together to make it easier to find valid data sources. The approach used in this study is Action Research, with the goal of improving and utilizing learning models to increase participant creativity. The Classroom Action Research is conducted in two cycles, with a Pre-cycle conducted beforehand to gather information on real conditions and problems in the school or classroom through observation. In the first cycle, the researcher held two meetings as part of the Classroom Action Research.

During each research cycle, there are three stages. The first stage is the planning phase, where the researcher prepares everything that needs to be done in the research, such as creating research indicators, conducting a literature review, and assessing the scope of the project. The second stage is the action phase, where the researcher takes action based on the planning done earlier. In the third stage, the researcher observes and collects data to strengthen the research. The goal is to enhance creativity and educate participants through Project Based Learning. The final stage is reflection or evaluation, where the researcher asks participants a number of questions to understand how much they have learned and how they have applied the project-based learning model to increase their knowledge and creativity in the subject. This research focuses on class VII social knowledge education (Krämer et al., 2021; Reiser & Gagné, 1982).

Figures 1. Design implementation Collaborative PTK cycle



This study is being conducted at Bangsal 1 Middle School, located in the Mojokerto Regency district of East Java, Indonesia. The sample group consists of students from Class VII/A, with a total of 31 participants being educated. The researchers will be conducting two cycles of the study, with the stages of future research including introduction, planning, implementation, and evaluation. During the first cycle, the researchers will discuss related issues with one of the existing teachers at the school. In the second cycle, they will design teaching and learning activities using a Project-based Learning model, which will include creating indicators for creativity and using questionnaires. Finally, they will compile a timetable or It's important to schedule.to prepare and coordinate with teachers at school for the Classroom Action Research Collaboration (PTKK) program with the aim of improving the knowledge of social affairs in junior high schools in Indonesia. The fourth stage of this program is monitoring, which helps to track progress and enhance the creativity of the research process. This involves analyzing past data collected through questionnaires filled out by the participants and calculating percentages using a specific formula. ;

Researchers determine the subject of study using the technique of Purposive Sampling. They hope that this technique will be effective in finding suitable research subjects, as they believe that the sample will have representative characteristics that will provide more effective and efficient data results. The study focuses on the application of the PJBL (Project-Based Learning) model to increase creativity, where participants produce their products using a differentiated approach, allowing them the freedom to develop ideas. The participants are also educated on the ideas they generate.

RESULTS AND DISCUSSION

$$\text{Percentage (\%)} = (\text{Number of parts}) \div (\text{Total Amount}) \times 100\%$$

Cycle 1

The implementation process was carried out in cycles by researchers. They held two meetings and used the Problem Based Learning model to educate salesmen and give them enough time to apply new ideas and insights. The material covered in the first cycle focused on social status, social roles, differentiation, and social stratification. The teaching was in accordance with the curriculum for independent study in seventh grade at a junior high school in Indonesia. The learning activities included an introduction, core activities, and closing, and a post-test and questionnaire were provided to measure the enhancement of creativity in participants after the application of the PJBL model in cycle one.

The researchers designed a device based on existing observations from teachers and researchers at school. They considered several things during the implementation of this PJBL model, including the fact that independent study is participant-centered learning. Therefore, they created devices that could support the interests, readiness, and profiles of the participants. The researcher also provided the freedom to choose the product they want, such as posters, pop-ups, Vlog videos, mind mapping, podcasts, articles, clippings, etc.

In Cycle 1 of implementation learning, there were a total of 31 participants from Class VII/A at the Junior High School. The researcher provided a monitoring sheet for participants to fill out, documenting their activities while creating the PJBL model product. This was done to monitor the implementation process, as participants carried out their sales. Additionally, during the learning process, the teacher monitored the activities of the participants for observational data on the implementation of PJBL. The researcher also created several indicators of creativity to determine whether the participants' creativity had increased. A questionnaire was used as an indicator to assess this.;

Table 1. Indicator Questionnaire Creativity and PJBL

No.	Aspect which is measured	Item Number
1.	Flexibility	1,2
2.	Originality	3,4
3.	Elaboration	5,6
4.	Fluency	7,8
5.	Redefinition	9,10
6.	Understanding PPA	11,12
7.	Implementation of PJBL	13,14
8.	PPA Obstacles	15,16

During cycle 1 of the PJBL model, most participants chose to use Mind Mapping for their educational needs. Almost 90% of them opted for Conventional and Digital Mind Mapping. To make it easier for participants to create their mind maps digitally, the Canva app was recommended. However, 29% of participants have not yet completed the criteria for achieving

their learning goals. As a result, the researcher provided remedial support to help these participants finish their learning achievements.

Cycle 2

For the second cycle of implementation, the same approach as the first cycle was used, which involves two meetings and the use of the PJBL (Project Based Learning) model. In this cycle, the researchers also worked with class VII/A at SMPN 1 Bangsal, with the same number of participants as the first cycle (31 students). The theme for learning in cycle 2 was focused on theme IV, which covers social and cultural diversity in society. During the salesman-making stage, the researchers monitored the process using the PJBL model.

During the second cycle of classroom observations, there was an improvement in the liveliness of the participants' education. In the first cycle, the participants appeared to be silent during the learning process, but in the second cycle, they were more active in asking about learning and coming up with various unique ideas and innovations. To enhance their learning experience, the researcher introduced differentiated learning techniques and allowed the participants to choose between making digital and conventional posters based on their interests and potentials. Despite these efforts, only 6% of the 31 participants achieved completeness in their learning achievements in this cycle.

In the first cycle of discussions, the researcher processed data from an existing questionnaire and analyzed interval and frequency data. The results are as follows:

Table 2. Interval and Frequency Percentage Cycle 1

No.	Criteria	Intervals	Cycle Frequency 1
1.	Not Creative	$X < 61$	2
2.	Less Creative	$61 < X \leq 70$	10
3.	Quite Creative	$70 < X \leq 78$	6
4.	Creative	$78 < X \leq 86$	12
5.	Very creative	$X > 86$	1
Σ			31

According to the table, the researcher's opinion results were presented in intervals denoted by the letter X. The value marked "Lowest" is $X < 61$, and there were 2 participants who scored under 65 and did not meet the criteria for creativity. On the other hand, participants who scored in the highest intervals, $X > 86$, indicating a score of 86 or more, were classified as "very creative." Only one participant scored in this category for the first.

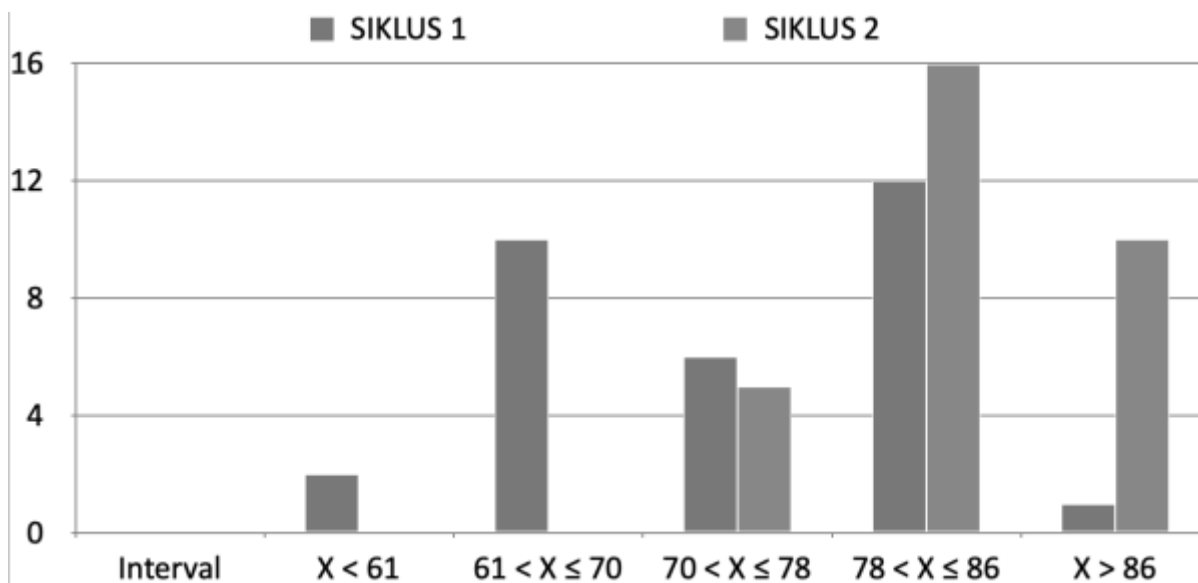
For analysis in the second cycle, the researcher found a significant difference in the results obtained from processing participant data, as shown in the following table.;

Table 3. Interval and Frequency Percentage Cycle 2

No.	Criteria	Intervals	Frequency
1.	Not Creative	$X < 61$	0
2.	Less Creative	$61 < X \leq 70$	0
3.	Quite Creative	$70 < X \leq 78$	5
4.	Creative	$78 < X \leq 86$	16
5.	Very creative	$X > 86$	10
Σ			31

In the first cycle, participants who scored less than 61 in the creativity category received a score of 0. Those who scored higher than 86 in the creativity category and participated in the study were 10 individuals. In the second cycle, the category with the highest number of participants was the "creative" category, with a total of 16 individuals scoring between 78 and 86 on the questionnaire. A comparison of these results can be seen in the following table.;

Figures 2. Diagram illustrating the percentage of interval and frequency for Cycle 1 and Cycle 2.



When analyzing and processing the results data, the interval and frequency percentage diagram showed that the most common category in the second cycle was "creative," with the criteria being an interval of $78 < X \leq 86$. Participants who were classified as not creative or lacking creativity were almost nonexistent. Therefore, it can be concluded that between cycles 1 and 2, there was an increase in creativity. Only one participant was categorized as "very creative" in the first cycle, but in the second cycle, there were ten participants classified in the "very creative" category.

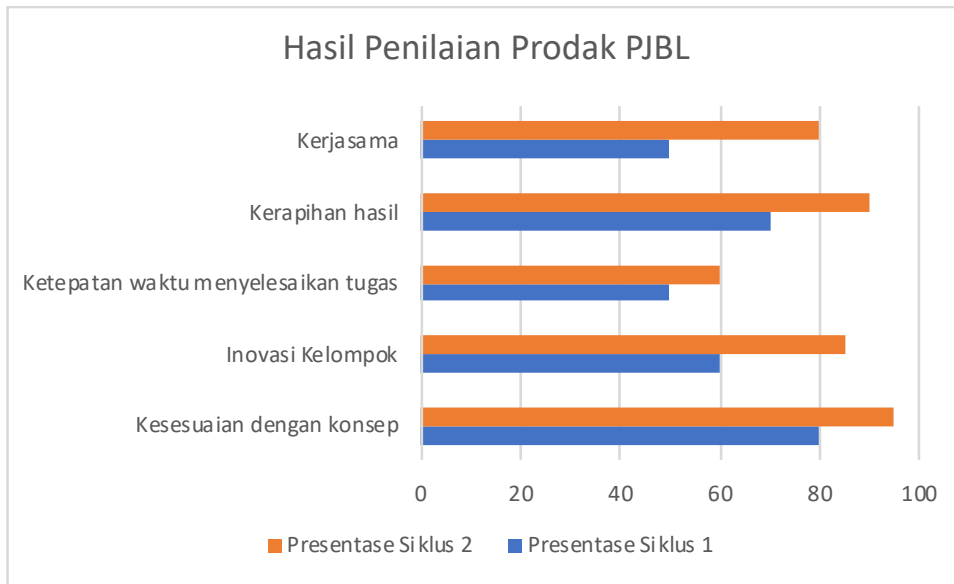
Besides analyzing the percentage questionnaire, the researcher also explained the results of evaluating the processed products in the table below.;

Table 4. Project-based learning product assessment.

NO	CRITERIA	Percentage	
		CYCLE 1	CYCLE 2
1	Suitability with draft	80	95
2	Innovation Group	60	85
3	Accuracy time finish task	50	60
4	Neatness results	70	90
5	Cooperation	50	80
AVERAGE		62%	82%

The researcher processed data to evaluate products created by researchers and obtained results in a table. Based on the table, it is evident that cycle 1 had an average value of only 62%, while cycle 2 experienced an increase with the average value percentage amounting to 82%. It can be concluded that cycle 2 had a higher average value percentage compared to cycle 1, by 20%. If diagrammed, it would look like the following ;

Figures 3. Evaluation of PJBL Products in Cycles 1 and 2 during Presentation.



Out of the five categories, participants seem to focus more on educating themselves about the suitability draft. This category has the highest percentage, with 95% found in cycle 2. This is also supported by researchers who suggest that participants should educate themselves on how to stay within the context of the learning material as directed by the teacher or researcher. On the other hand, the lowest percentage was obtained in the evaluation salesman category. This is understandable as it requires accuracy and time, thus achieving only 50% in cycle 1. As for the completeness of learning achievements, the percentages for participant students in cycles 1 and 2 are as follows: (insert percentages here);

Table 5. Presentation Completeness Achievements Learning Cycles 1 and 2

No.	Percentage of Earnings	Cycle 1	Cycle 2
1.	Students who have completed	22	29
2.	incomplete students	9	2
3.	Percentage (%)	29%	6%
Number of Students		31	31

The table shows that during cycle 1, 29% or 9 out of 31 participants did not complete their learning achievements and needed further education. However, during cycle 2, only 6% or 2 participants out of 31 needed further education, indicating that fewer participants required additional assistance. As a result, it can be concluded that the Project Based Learning model resulted in a higher number of participants completing their material, particularly in subjects related to Knowledge and Social Skills. This information is visually depicted in the following diagram ;

Figures 1. Cycle 1 and Cycle 2 Learning Achievements Chart Percentage of Completion.

According to the diagram results, the participant's achievement in completing the learning cycle 1 was only 43%. However, in cycle 2, the completeness achievement percentage increased to 57%. Therefore, it can be concluded that there was a 14% increase in the participant's education level between the first and second cycle.

Based on the results and discussion, researchers concluded that using the Problem-Based Learning (PJBL) model can enhance students' creativity. This aligns with previous studies. The study specifically focused on the first creativity indicator, which is flexibility. Participants who were educated with the PJBL model were able to generate new ideas without closing their minds to external ideas or those from others. As a result, participants improved their insight in creating something new, particularly in the area of creativity..

During classroom action research, there was a noticeable difference between cycle 1 and cycle 2. There was significant improvement in the development of students' abilities and interests, particularly in 21st century skills like the 6C skills, which include creativity. This is important for preparing students for the Society 5.0 era industry. The study showed that using the PJBL learning model can enhance creativity, specifically in the seventh-grade students in class VII/A at a junior high school in Indonesia. .

CONCLUSION

After conducting research using the PJBL deep learning model, it was found that creativity among participants in class VII/A at a junior high school increased significantly. This research aimed to improve the effectiveness of the deficient learning system and enhance the creativity of participants in the learning process. Analysis of the data collected from the first and second cycles showed a notable improvement, with only one participant falling under the "very creative" category in the first cycle, while 10 participants were categorized as "very creative" in the second cycle.

THANK YOU NOTE.

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