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## IMPLEMENTATION OF THE PJBL (*PROJECT-BASED LEARNING*) MODEL IN INCREASING STUDENTS' CREATIVITY

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### ABSTRACT

This research discusses the creativity skills carried out by researchers because they want to improve and increase learning creativity by using the *Project-Based Learning* learning model, for this research was carried out at SMP Negeri 1 Bangsal. While the type of research conducted by the researcher is a type of collaborative class action research consisting of 2 learning cycles where each cycle is carried out 2 meetings, while for the structure and stages of this research in accordance with PTK in general, the first is planning, the second is the implementation (*action*), the third is observation), and the last is reflection and (*Evaluation*). For the subject of this study, all students of class VII/A totaling 31. Meanwhile, the instruments used by the researcher were in the form of learning observation sheets, questionnaires to determine the increase in creativity, as well as the results of learning assessments and documentation. The results and discussion of this research will be emphasized on the analysis of data processing from the results of the questionnaire, product assessment, and the percentage of completeness of the learning material. From this study, the researcher found an increase in creativity from the indicators that have been made and implemented.

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## INTRODUCTION

Education today is considered to be a system and foundation for those who want to build their own potential and characteristics, with various strategies of many countries that compete with each other in developing the potential that exists in their countries, starting from countries that are less developed to countries that are already developed. In the past, many people spoke enthusiastically about skills related to themselves, including in terms of their enthusiasm and even creativity in making a new product or strategy to make their work and activities easier, this also applies to the present and the future as well. Thus people must demonstrate their ability to adapt to a change and will continue to learn as long as they are still breathing and given life by the supreme creator. With critical thinking and the ability to proactively identify problems that often occur, creating a solution to these problems, and making decisions in the context of uncertainty, as well as minimizing the occurrence of risks, is very influential and has a great impact in creating an ideal educational world (Castro-Lopes et al., 2021)

In an era like today, where in a country, namely Japan, it has published that it has now entered the *industrial revolution Society 5.0*. Which means that the activities carried out by society or humans will be replaced by technology or robotics, and in the post-Society 4.0 period it has been developed for artificial intelligence or known as *Artificial Intelligence* where the intelligence can carry out interactive interactions and can answer all the questions we ask, this already reflects that it will replace the human brain (Bernadetta Purba, 2021; Lawton et al., n.d.).

Said by Lumsdaine (1995: 14) about the use of imagination and the various possibilities obtained from interaction with the ideas or ideas they develop, including developing what has been created by others and the environment to make new and meaningful connections, experiments, and results for themselves and the surrounding environment and even the global community. This means developing the ability to think alternatively or can be termed as open thinking and various points of view (*multidimensional*) so that they can achieve the desired goals and become more meaningful. If it is logged, a person who experiences emptiness can be called someone who has an empty mind or the person is said to have lost his step, because he can no longer do anything. From the following *stigma*, creativity here is not *absolute* but creativity is more dynamic and can change, it can happen because creativity also involves feelings, a person's mentality, a person's level of awareness and emotions (bara, 2019). And when we as humans are created with various advantages and disadvantages. If it is given an example that we unconsciously have the assumption or perception that we are not capable of

doing something, then we will also consciously not be able to do it, and vice versa if we unconsciously perceive that we are capable of doing this, then consciously we will also be able to do it. It can be concluded that a person's self-esteem can reappear unconsciously will be followed by his confidence. In creativity, more emphasis is placed on the brain's work system, where if the brain's work system works actively and optimally, the creativity produced also experiences a significant increase. With the use of the left brain work system which functions to logic and actualize, while the right brain work system regulates *humanism* which means controlling the concept of truth in human life (Chen & Yang, 2019; Loyens et al., 2023).

In essence, a human being or someone who is discarding material or who is carrying out the learning process or known as the teaching and learning process is a communication between teachers and students, by delivering material that has been prepared by educators. If based on law No. 20 of 2003 it is clear that the duty of a teacher is not only to explain or convey material but also teachers have duties and responsibilities, namely how this teacher or educator guides and provides education and learning to students so that they become complete human beings, and the concept that must be brought by educators or teachers is to humanize human beings. who are educated will continue to take several classes that the teacher teaches. Therefore, in the new paradigm of education, teachers must have a professional attitude so that what is given by teachers can be more ideal and good for students (Fitriyani et al., 2021; Guo et al., 2020). The meaning of the word professional itself is not only teachers always teach but back to the concept of education above that good education or learning is learning that humanizes humans. Like the ideas used in the independent learning curriculum, namely the idea of the Education figure Ki Hajar Dewantara, he talked a lot about education, one of which is learning that provides comfort to students, teachers guide students instead of demanding, the Amo system, and so on. With this foundation, the learning that is expected in the 21st century can make *student-centered learning* (Sari et al., 2018).

The Project Based Learning (PJBL) learning model is intended as a learning model that adds knowledge or skills for students who have experienced and solved real-world problems, meaning that the PJBL model adds knowledge and skills for students. Such as making a product that will be a solution to every problem that exists in the real world and the environment around students. Because of these criteria, PJBL has been recognized as an effective and efficient 21st century learning model, although PJBL has only been recognized in the 21st century, but this model is not a new learning model in pedagogical studies, this model has been first developed by David Snedden, who teaches science in agriculture classes in one of the countries, namely in America. He developed PJBL guided by the idea expressed by the educational scientist, Jhon

Dewey who believed that a person learns by doing or acting and making something better than just listening to information provided by educators or teachers (Yin & Huat, 2021). The Project Based Learning (PJBL) learning model is intended as a learning model that adds knowledge or skills for students who have experienced and solved real-world problems, meaning that the PJBL model adds knowledge and skills for students. Such as making a product that will be a solution to every problem that exists in the real world and the environment around students. Because of these criteria, PJBL has been recognized as an effective and efficient 21st century learning model, although PJBL has only been recognized in the 21st century, but this model is not a new learning model in pedagogical studies, this model has been first developed by David Snedden, who teaches science in agriculture classes in one of the countries, namely in America. He developed PJBL guided by the idea expressed by the educational scientist, Jhon Dewey who believed that a person learns by doing or acting and making something better than just listening to information provided by educators or teachers (Chang & Lee, 2010; Lu, 2023).

One of the activities of the teaching and learning process is through the use of *the Project Based Learning* model, in research papers made by biological and biological Agustin (2016) stated that *Project Based Learning* is defined as learning that has a meaningful and contextual depth that prioritizes *Student Centered* and uses problems in the environment around students, it is to realize and construct student learning to be more developed and creative. Gunawan (2017) also states that learning based on making products or projects is suitable for science learning because it is able to develop *self-efficacy* which is meant to develop a strong attitude of confidence in making and carrying out the tasks given by teachers (Permana et al., 2021).

Especially in the subject of Social Studies (*Social Sciences*) where social studies if learning that uses PJBL will provide real experience to students. Usually, the social studies method used is only in the form of lectures, discussions, etc., thus the application of PJBL is expected to be able to increase the creativity of students.

From the elaboration of many backgrounds, the strongest one in this research is that the researcher wants to know this Project Based learning if it is applied in one of the schools in Mojokerto district, namely SMP Negeri 1 Bangsal because the researcher wants to provide learning that increases their creativity by using *the Project Based Learning* learning model. This means that the researcher wants to provide meaningful learning for students and can increase the potential and characteristics that exist in students (Bukhori et al., 2022; Triana Dewi Harizah et al., 2021). The provision of meaningful learning is not necessarily just learning

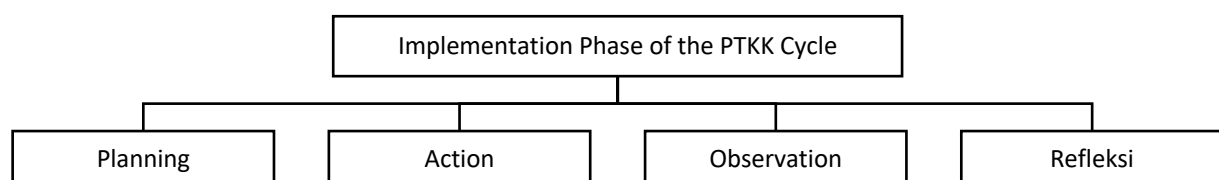
and teaching but preparing and analyzing to evaluate to find out the achievements and characteristics of students (Hayati et al., 2019; Muhajir Pendidikan Biologi et al., 2022).

## RESEARCH METHODS

The type of research that will be used by the researcher is collaborative classroom action research (PTKK) by collaborating with the researcher and one of the teachers to facilitate and find valid data sources, while the approach used in this study is *Action Research*. This class action research is carried out because it is to improve and use learning models to increase students' creativity. This class action research is carried out for 2 cycles, but before the implementation of the cycle, the researcher will conduct a Pre-cycle to find information related to problems and real conditions in schools and in the classroom by observation methods. As for the first cycle, it is like in the other class action studies where the researcher takes 2 meetings from the first and second cycles.

For its own stages, each cycle has several stages, the first is the planning stage where the researcher will prepare everything that will be done in the research such as making research indicators, learning tools, assessments, etc. As for the second stage, the researcher's action is to take action or (*Action*.) based on the planning that has been made initially, while for the third stage is observation, it is done to strengthen the data sources to be obtained and aims to determine the increase in students' creativity during the implementation of *Project Based Learning*. And the last stage is reflection or evaluation for this evaluation, the researcher provides several questions that will be worked on by students to find out how much meaningful understanding they get after applying the project-based learning model to increase the creativity of grade VII students in the Social Science subject (Krämer et al., 2021; Reiser & Gagné, 1982).

**Figure 1. Collaborative PTK cycle implementation plan**



This research was carried out at SMPN 1 Bangsal, precisely located in Bangsal District, Mojokerto Regency, East Java Province, Indonesia, the class used as a research sample with a total of 31 students in Class VII/A. There are 2 cycles that will be carried out by the researcher, while the stages of research that will be carried out by the researcher are introduction, implementation planning, and evaluation. the first in the implementation of this research is to

discuss the problems that will be raised with one of the teachers in the school, the second, design (*Planning*) teaching and learning activities (design Project) using *the Project based Learning* model such as devices, making creativity indicators for questionnaires etc., the third is to prepare a schedule or schedule as a preparation and agreement with the teacher at the school, due to the research of collaborative classroom actions (PTKK) with teachers of Social Sciences subjects at SMP Negeri 1 Bangsal. The fourth stage is (*monitoring*) this aims to find out the progress of the project work to be carried out, while to find out the increase in the creativity of researchers to process interval and frequency analysis data through questionnaires that have been filled out by students, and to do percentages with the formula below;

$$\text{PERSENTASE } x = \frac{\text{NILAI } x}{\text{NILAI PEMBANDING } x} \times 100\%$$

The researcher determined the research subject based on *the Purposive Sampling* technique in accordance with the researcher's expectations that the technique was indeed quite effective in finding research subjects, because the researcher considered that the sample was considered representative to provide more effective and efficient data results. Meanwhile, the focus of this research is on the application of the PJBL Project based learning model to increase creativity by making the products they produce using a differentiation approach so that they get freedom in developing ideas and ideas owned by students.

## RESULTS AND DISCUSSION

### SIKLUS 1

The implementation carried out by the researcher in the first cycle was carried out in two meetings using the Problem Based Learning model, the researcher can maximize the creation of products to students by giving enough time to apply their ideas and ideas. For the material itself in the first cycle regarding status, social role, differentiation, and social stratification, the material is in accordance with the teaching in the independent learning curriculum for grade VII at SMPN 1 Bangsal and for the learning flow activities consist of an introduction to the core activities, and a conclusion and not forgetting at the end of the learning the researcher provides a Post-test and questionnaire to find out the increase in creativity in students after the application of the PJBL model in cycle 1. As usual, the researcher makes a design in advance such as making a learning rank based on observations that have been made by the researcher and teachers at the school. From the design that has been made by the researcher, there are several things that are considered in the implementation of this PJBL, because the independent learning curriculum is a learning that is focused on student-centered

learning, the researcher also makes tools that can support students' interests, readiness, and profiles. By using the concept of differentiated learning, researchers give the freedom to choose the products they want to make, for example Posters, Pop Ups, Video Vlogs, Mind Mapping, Podcasts, Articles, Klipping, and others.

For the implementation of learning in cycle 1, students who participated in the learning were a total of 31 students from class VII/A SMPN 1 Ward. In its implementation, the researcher provided a monitoring sheet to students to fill in what activities they did during the making of this PJBL model product. This is done to monitor the implementation of product making carried out by students. During the learning process, the teacher also monitors the activities carried out by students to become observation data for the implementation of PJBL. And in addition, researchers have made several creativity indicators to see whether students' creativity has increased or not, the questionnaire indicators are as follows;

***Table 1. Creativity and PJBL Questionnaire Indicators***

| No. | Aspects measured            | Item Number |
|-----|-----------------------------|-------------|
| 1.  | Flexibility                 | 1,2         |
| 2.  | Originality (authenticity)  | 3,4         |
| 3.  | Elaboration (decomposition) | 5,6         |
| 4.  | Fluency (kelancaran)        | 7,8         |
| 5.  | Redefinition                | 9,10        |
| 6.  | Understanding PJBL          | 11,12       |
| 7.  | Implementation of PJBL      | 13,14       |
| 8.  | PJBL Constraints            | 15,16       |

The implementation of PJBL model learning in cycle 1 students mostly prefer to make Mind Mapping, almost 90% of them choose Conventional and Digital Mind Mapping, for which the creation is digital, students use the Canva application to make it easier to make the design. As for the criteria for completeness of learning outcomes in this cycle, there are 29% of students who have not completed them, so the researcher proposes several remedialials to complete their learning outcomes.

## **SIKLUS 2**

The implementation of cycle 2 is the same as the first cycle, namely 2 meetings, the model is also used, namely PJBL (*Project Based Learning*). For the sample in this second cycle, the researcher also took class VII/A at SMPN 1 Bangsal, while the number of students who took part in this cycle was 31, the same as the first cycle. As for the learning theme in cycle 2, it has been included in theme IV "*which is about social and cultural diversity in society*". At the stage of making products, researchers also conduct "*monitoring*" to monitor the processing of making products with this PJBL model.

As for cycle 2 from the results of observations in the classroom, there was an increase in terms of student activity, such as the researcher found that students who initially seemed silent during the learning process, they were more active in asking questions about learning such as products that they would make with various kinds of their unique ideas and innovations. For this second cycle, the researcher made tools and learning using the concept of differentiation such as cycle 1, in this cycle students prefer to make digital and conventional posters according to the interests and potentials of the students. Of the total 31 students, the percentage of completeness of learning outcomes in this cycle is only 6%.

In the first discussion for cycle 1, the researcher processed data from the results of the questionnaire that had been carried out, the researcher analyzed the interval and frequency data in this first cycle with the following results;

***Table 2. Interval and Frequency Percentage of Cycle 1***

| No.          | Criteria       | Interval         | 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                 |
| <b>TOTAL</b> |                |                  | 31                |

From the table, the researcher obtained results in the form of an interval presentation denoted by the letter X, while the score that had the lowest score was  $X < 61$  students who got below 65 amounted to 2 people with uncreative criteria. while students who had the highest score interval of  $X > 86$  Which means that a score of more than 86 has a very creative category with 1 student for the first cycle.

As for the analysis of this second cycle from the results of data processing, the researcher found a significant difference in the results of filling out questionnaires by students as in the following table;

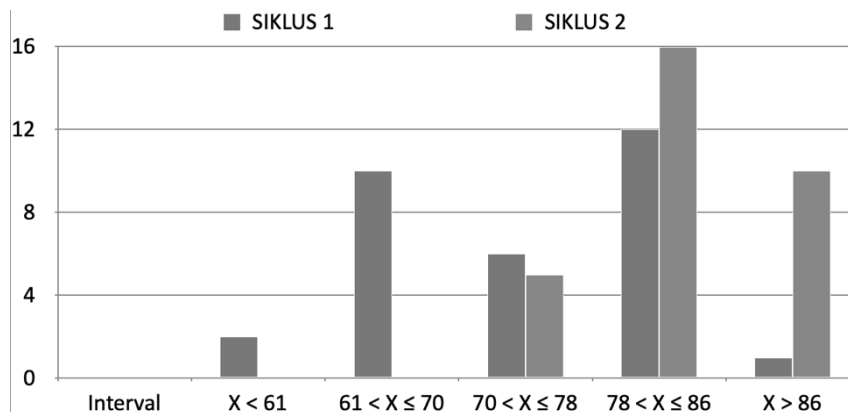
***Table 3. Interval and Cycle Frequency Percentage 2***

| No.          | Criteria       | Interval         | 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        |
| <b>TOTAL</b> |                |                  | 31        |



In contrast to the first cycle for students who get the uncreative category from the interval  $X < 61$  to 0. while for those who get the very creative category, there are 10 students with an interval of  $X > 86$  from the results of filling out the questionnaire. As for the most categories obtained in this second cycle, the creative category with a total of 16 people from an interval of  $78 < X \leq 86$ . If a comparison is made, the results will be obtained as shown in the following table;

**Figure 2. Interval and Frequency Percentage Chart of Cycles 1 and 2**



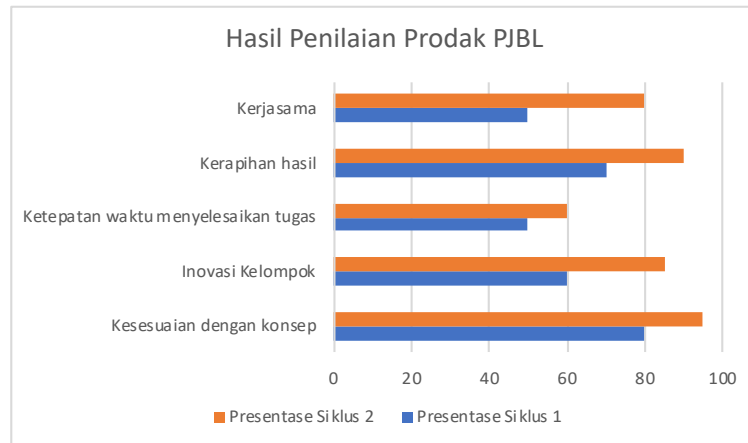
From the interval and frequency percentage chart obtained from the results of analysis and data processing, the highest percentage of these two cycles is in the creative category with the Creative criteria of an interval of  $78 < X \leq 86$ . Meanwhile, students who get the category of uncreative and less creative are almost non-existent. Therefore, it can be concluded that the analysis of the percentage of interval and frequency data between cycles 1 and 2 has increased, where only 1 student with the very creative category but in cycle 2 gets 10 students who get the very creative category. In addition to the percentage of questionnaires that were analyzed, the researcher also explained the results of the assessment of the products that have been processed in the following table;

**Table 4. Penilaian Prodak Project-Based Learning**

| NO      | CRITERIA                       | Presentase |          |
|---------|--------------------------------|------------|----------|
|         |                                | SIKLUS 1   | SIKLUS 2 |
| 1       | Conformity to the concept      | 80         | 95       |
| 2       | Group Innovation               | 60         | 85       |
| 3       | Timeliness of completing tasks | 50         | 60       |
| 4       | Neatness of results            | 70         | 90       |
| 5       | Collaboration                  | 50         | 80       |
| AVERAGE |                                | 62%        | 82%      |

In the table, the researcher gets the results of data processing regarding the assessment of the product made by the researcher. From the results of the table above, it shows that the average score of cycle 1 only obtained a percentage of 62% while cycle 2 increased with an average percentage of 82%. So it can be concluded that cycle 2 gets a higher percentage of average scores than the average percentage of cycle 1 of 20%. If it is diagrammed, it is as follows;

**Figure 3. Percentage of Assessment of PJBL Cycle 1 and 2 Prodak Assessment**



Of the five categories of students with more percentage, the highest percentage is in the conformity of the concept with a percentage of 95% contained in cycle 2, it is also supported by the researcher in guiding students so that they do not go out of the context of the learning material according to the direction given by the teacher or researcher. While the lowest percentage obtained in the assessment of this product is the punctuality part which only has a percentage of 50% in cycle 1, because the manufacture of the product which indeed takes a long time. As for the percentage of completeness of students' learning outcomes in cycles 1 and 2 as follows;

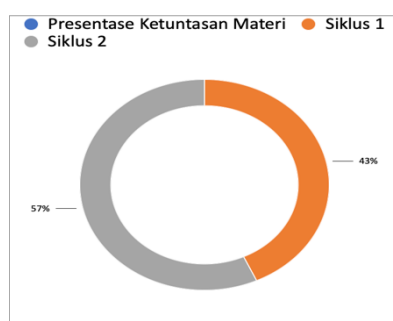
**Table 5. Percentage of Completeness of Learning Outcomes in Cycles 1 and 2**

| No.                | Percentage of Acquisition   | Siklus 1 | Siklus 2 |
|--------------------|-----------------------------|----------|----------|
| 1.                 | Students who have completed | 22       | 29       |
| 2.                 | Incomplete students         | 9        | 2        |
| 3.                 | Presentase (%)              | 29%      | 6%       |
| Number of Students |                             | 31       | 31       |

In the table above for cycle 1, students who did not complete the learning achievement were 29% which amounted to 9 people out of 31 students. As for cycle 2 only 6% or 2 people out of 31 students, it can be concluded that cycle 2 has only a few students who are not complete in learning achievements. Thus, the decrease in the completeness of learning materials concludes that the PJBL learning model makes students more likely to complete learning

materials, especially in Social Science lessons. If it is depicted in the diagram then the following results;

**Figure 1. Chart of Percentage of Completeness of Learning Outcomes in Cycle 1 and**



From the results of the diagram, students who obtained the completeness of learning outcomes in cycle 1 were only 43%, while the completeness of learning outcomes in cycle 2 obtained a percentage of 57%. So it can be concluded that the percentage increase in students between the first cycle and the second cycle experienced an increase in percentage by 14%.

From the results and discussion of the researcher, it can be concluded that learning with the PJBL (*Problem Based Learning*) model can increase student creativity, in accordance with the results of previous research. In this study, especially in the first indicator of creativity, namely *Flexibility* or Flexibility, students can mostly create new ideas or ideas by not closing their minds to ideas or ideas from outside or other people, that way students will increase their insight in creating something new, especially in creativity.

Meanwhile, the comparison in this class action study between cycle 1 and cycle 2 underwent many changes that were good enough for them to develop their potential according to their ability and learning interests. In 21st century skills, especially the 6C skill, one of which is that students must have *Creative Skills* in welcoming the industrial revolution of the Society 5.0 era. Thus, the results of the study concluded that the application of the PJBL learning model can increase the creativity of students, especially in grade VII/A students at SMP Negeri 1 Bangsal.

The results of the study show that the application of *the Project-Based Learning* (PJBL) model in social studies learning in grade VII/A SMPN 1 Bangsal has a positive impact on increasing students' creativity and learning achievements. Data in cycles 1 and 2 show significant changes in terms of creativity, product quality, and learning completeness. However, the increase is not only seen as a change in numbers, but needs to be analyzed in depth to understand the causative factors and their meaning. In cycle 1, the distribution of

students' creativity was still dominated by the "less creative" and "quite creative" categories, with only 1 student in the "very creative" category. This shows that in the early stages, students are still in the adaptation phase to the PJBL learning model. They are not yet fully accustomed to learning that demands independence, exploration of ideas, and responsibility for the products produced. This condition is natural because previous learning tended to be conventional and teacher-centered. Entering cycle 2, there was a significant increase in the creativity category, where there were no more students who were in the "uncreative" and "less creative" categories, and there was a surge in the "very creative" category from 1 to 10 students. This increase shows that students are starting to be able to adapt to the PJBL approach. Pedagogically, this indicates that project-based learning experiences provide space for students to develop ideas, experiment, and construct knowledge independently.

This increase in creativity occurs due to several factors. First, the application of differentiated learning gives students the freedom to choose the type of product according to their interests and talents, such as posters, vlog videos, or *mind mapping*. This freedom increases the sense of belonging to the learning process and encourages higher engagement. Second, the monitoring process carried out by teachers helps students stay focused in completing their projects. Third, project-based learning allows for collaboration, which indirectly enriches ideas and improves the quality of the work. When associated with product assessment, the average increase from 62% in cycle 1 to 82% in cycle 2 indicates that increased creativity is directly proportional to the quality of learning outcomes. The biggest improvement was seen in the aspects of group innovation and cooperation, which were previously low in cycle 1. This shows that through PJBL, students not only learn individually but also develop social skills such as communication and collaboration.

In addition, the increase in learning completeness from 71% (cycle 1) to 94% (cycle 2) strengthens the finding that PJBL is effective in improving concept understanding. The reduction in the number of students who did not complete from 9 to 2 shows that this approach is able to reach more students, including those who previously had learning difficulties. This happens because PJBL provides a contextual and meaningful learning experience, so that students can understand the material more easily. This finding is in line with the research of Thomas (2000) who stated that PJBL is able to increase student involvement and understanding through experiential learning. In addition, Bell (2010) research shows that PJBL is effective in developing 21st century skills, including creativity and critical thinking skills. Similar results

were also found by Kokotsaki et al. (2016) who emphasized that project-based learning has a positive impact on student motivation and learning outcomes.

In the Indonesian context, these findings are consistent with research by Sari et al. (2020) which shows that PJBL can increase student creativity through contextual project activities. Another study by Wulandari (2019) also states that project-based learning is able to significantly increase student learning outcomes and activeness. In fact, research by Fitriani et al. (2021) found that the application of differentiation-based PJBL is able to accommodate differences in student learning styles so as to increase learning effectiveness. Theoretically, the increase in creativity in this research can be explained through the theory of constructivism, where students build knowledge through direct experience. PJBL provides opportunities for students to be involved in the process of exploration, reflection, and product creation, so that learning becomes more meaningful. In addition, within the framework of 21st century skills (6C), PJBL directly trains *creativity*, *collaboration*, and *critical thinking*, which are urgently needed in the Society 5.0 era.

However, there are still obstacles in the timeliness aspect which shows a relatively low increase compared to other aspects. This indicates that although students are creative, they still need to be trained in time management and work planning. In other words, PJBL not only requires creativity, but also *self-management skills*. Overall, the increase that occurred from cycle 1 to cycle 2 not only shows the success of the implementation of PJBL, but also illustrates the learning process that develops gradually. Students not only become more creative, but also more active, independent, and able to work together. Thus, PJBL has proven to be an effective learning model in increasing students' creativity and learning achievements, especially in social studies subjects.

## CONCLUSION

Based on research conducted using the PJBL learning model in increasing the creativity of students in grade VII/A at SMPN 1 Bangsal, the results were quite satisfactory. Because the purpose of this class action research aims to improve the less effective learning system and increase the creativity of participants in the learning process.

Meanwhile, from the results of the analysis, the percentage of interval and frequency data analysis between cycles 1 and 2 has increased, where only 1 student with the very creative category, but in cycle 2 there are 10 students who get the very creative category.

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