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The Influence of Project Based Learning Model on Elementary School Students' Learning Outcomes and Creativity in Science Learning

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Abstract: Low learning outcomes and student creativity so that in science learning at SD Negeri 2 Gegerung Bener Meriah. This results in a lack of student scores, especially in science lessons. One solution to overcome this problem is to apply a learning model that supports student activity, using the Project Based Learning model in accordance with the syntax of the model. This study aims to determine the effect of the Project Based Learning learning model on student learning outcomes and creativity. This research is a one-group pretest-posttest-design research. The population in this study were all fifth grade students. The sample in this study was selected by Purpose Sampling. The instruments used in this study were Pre-Test and Post- Test test questions for learning outcomes and student creativity observation rubrics. In the data collection technique for student learning outcomes, students are given test questions in the form of initial tests and final tests, then the data is analyzed by the t test. while for data collection of student creativity in the form of an observation rubric filled in by the observer. The results of the statistical test showed that the significance value was 0.04 <0.05, so the Ho hypothesis was accepted, so it could be concluded that there was an effect of the Project Based Learning model on learning outcomes. While for classical student creativity reached 85.71%, it can be said that the level of student creativity in this study is very creative. So it can be concluded that there is an effect of the Project Based Learning model on student creativity compared to learning taught using conventional models.

Keywords: Project based learning, learning outcomes, student creativity, science learning.

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INTRODUCTION

One of the main objectives of national education is to shape students into creative individuals. Creativity is very important considering the rapid development of the era that raises various challenges in various aspects of life. Therefore, creative human resources are needed to find solutions to these problems. In the context of education, serious attention to the development of creativity is very necessary, because with consistent efforts in developing creativity, students will be able to face various life problems, from simple to complex, and from personal to social problems, even to national and global scales.

The development of creativity can be effectively enhanced through the application of the Project Based Learning (PjBL) learning model. The PjBL model provides space for students to hone creative skills, collaborate with others, gain real experience, and at the same time increase their intrinsic motivation. This is in line with the theory of the hemispheres of the brain which states that the left hemisphere plays a role in convergent thinking skills that emphasize student intelligence, while the right hemisphere plays a role in divergent thinking skills that emphasize creativity (source). By optimizing both hemispheres of the brain simultaneously, students can not only master learning concepts, but also mentally think creatively in solving various problems, so that the quality of education can be improved in accordance with national education targets.

Natural Science (IPA) is a discipline that studies natural phenomena and systematic events based on observation and experimentation. Therefore, the PjBL learning model is very appropriate to be applied in science learning. In choosing a learning model, teachers need to consider the characteristics and needs of students as learning subjects, considering that each student has different abilities and learning styles. However, learning does not have to be done individually, but through methods that can accommodate the needs of all students. The PjBL model that demands student creativity through the project creation process is one effective alternative in this case.

PjBL can be interpreted as a learning model with long-term activities that involve students in designing, making, and presenting products to solve real problems. This active learning approach encourages student creativity through the process of "learning by making" (source). This student creativity can be analyzed from personal, process, product, and environmental aspects. In addition, the application of PjBL is also expected to be able to significantly improve student learning outcomes. Creative students tend to have a high interest in learning, self-confidence, and perseverance so that they are able to achieve satisfactory learning outcomes. According to Munandar (in Dirlanudin), creativity plays an important role in improving learning outcomes because it can motivate students to study harder, and stimulate the learning process which ultimately has a positive impact on learning achievement.

The results of observations in the field show that students' creativity is still lacking, which has a negative impact on their learning outcomes. This is because the teaching methods of teachers who mostly still use traditional lecture, question and answer, and discussion methods, especially in science learning, which are less interesting for students, causing boredom and tedium. From an interview with the homeroom teacher of grade V SDN Gegerung, Weh Pesam District, Bener Meriah Regency, it was revealed that only 50% of students achieved the Minimum Completion Criteria (KKM) in science learning, while the other 50% had not met these standards.

Several previous studies on the effectiveness of the PjBL model on creativity and student learning outcomes include research by Khoiri, Marinia, and Kurniawan which concluded that PjBL is effective in improving creativity and learning outcomes of grade XI students (source). Maizar Azha's research also shows that the implementation of PjBL has a significant effect on students' creativity in static fluid material (source). Meanwhile, a study by Apriany, Winari, and Muktadir confirmed that PjBL can improve the cognitive learning outcomes of fifth grade students in science subjects (source).

However, there has been no research examining the use of the PjBL model at the Elementary School (SD) and Madrasah Ibtidaiyah (MI) levels. Therefore, this study aims to examine the effect of the Project Based Learning learning model on the creativity and science learning outcomes of fifth grade students of SD Negeri II Gegerung, Bener Meriah.

METHODS

The research design used in this study is One-Group Pretest-Posttest-Design. In this design, only one group is taken as a sample. They are given a pre-test and post-test to find out whether there is a difference when the project based learning model is implemented or not.

Quantitative research methods are one type of research that explains systematically, structured, and clearly planned from the beginning to the creation of the research design. Another definition states that quantitative research is research that requires a lot of use of numbers, starting from data collection, interpretation of data, and presentation of results.

The type of research conducted here is a type of pre-experimental research with only one group or class given a pre-test and post-test. Where the experimental class carries out learning with the Project Based Learning (PjBL) model and in this experiment it is carried out on one group without a control group and comparison group. Here the group is given treatment, then students must first do a pretest before the implementation of the project based learning model after the implementation, then a posttest is given to students as a comparison of student learning outcomes after the implementation and before the implementation. This research was conducted at SDN 2 Gegerung, Weh Pesam District, Bener Meria Regency, this research was conducted in the 2023/2024 academic year, even semester. The subjects in this study were all fifth grade students at SDN 2 Gegerung with a total of 14 students. This study took class V at SDN 2 Gegerung due to the lack of learning outcomes and student creativity during learning.

RESULTS

The implementation of this research was conducted at SD Negeri 2 Gegerung in class V totaling 18 students. The researcher took this class as an experimental class and taught by applying the Project Based Learning learning model to students' science learning outcomes and creativity. This research was conducted in order to answer the question of whether the Project Based Learning learning model has an effect on students' science learning outcomes and creativity. This research was conducted on May 25 and 27, 2024. Where at the beginning of the meeting students will learn without implementing the model after which they are given pre-test questions, and at the next meeting in the learning process the Project Based Learning model that has been prepared by the researcher is implemented, then after the model is implemented at the end of the meeting students will be given post-test questions.

In the pre-test and post-test, the same questions will be given to see whether their learning outcomes have improved or not. Meanwhile, student creativity will be seen from the time the learning is carried out where during the lesson students are asked to make breathing props. So for student creativity, it will be measured using a rubric that has been made by the researcher. Student learning outcomes and creativity are measured in science lessons on CHAPTER 5 How We Live and Grow (Topic A How Breathing Helps Me Do Daily Activities). This material is found in the natural and social science (IPAS) book for grade V elementary school. There are several things that need to be analyzed, namely:

Analysis of Learning Outcomes

The results of the research that has been conducted by researchers using the Project Based Learning learning model on the learning outcomes and creativity of science students in grade V of SD Negeri 2 Gegerung. In science lessons on CHAPTER 5 How We Live and Grow (Topic A How Breathing Helps Me Do Daily Activities). This material is found in the natural and social science (IPAS) book for grade V elementary school which was carried out on May 25 and 27, 2024. Based on the results of the analysis, it can be seen that the comparison of learning outcomes has a significant effect. In this case, the hypothesis testing uses the One-Group Pretest-Posttest-Design because it only has one paired sample (collated

sample). The test results use a paired sample test at a significant level of sig. (2-tailed) or the significance value is 0.04. In accordance with the basis for making decisions, the comparison of significance values can be concluded that 0.04 <0.05, so Ha is accepted and Ho is rejected, which means that there is an influence of the Project Based Learning learning model on the learning outcomes and science creativity of grade V students of SD Negeri 2 Gegerung Bener Meriah. And through the Pearson Correlation value of the two variables is 0.978, which means that the two variables have a very strong and positive interpretation of the correlation coefficient or level of relationship.

Analysis of Student Creativity

The results of the research conducted can prove that the Project Based Learning model has an effect on student creativity in science lessons on CHAPTER 5 How We Live and Grow (Topic A How Breathing Helps Me Do Daily Activities). This is possible because the Project Based Learning model emphasizes more on student learning towards their learning creativity. The teacher's task is no longer to emphasize students listening, but to guide them to be able to engage in creativity with the Project Based Learning learning model.

The percentage of student creativity scores in the research conducted shows that each indicator shows that the level of student creativity can be seen through the number of students who are able to achieve the very good or very creative category as many as 12 students with an average score of 88.21 and students who get good as many as 2 students. While the level of student creativity classically has only reached 85.71%, it can be said that the level of student creativity in this study is at a very good level. So it can be concluded that the implementation of the Project Based Learning learning model has an influence on student creativity.

DISCUSSION

The implementation of the Project Based Learning (PjBL) learning model has been proven to significantly improve student learning outcomes at various levels of education, including elementary schools. Various recent studies have shown that PjBL contributes positively to students' academic achievement and thinking skills comprehensively (Frontiers in Psychology, 2023). The PjBL learning model requires active student involvement in designing, implementing, and evaluating projects, so that it can foster critical and creative thinking skills that are essential in science learning. With this approach, students can connect theory with real practice, so that understanding of science concepts becomes deeper and more applicable (ResearchGate, JPSI). In addition to improving learning outcomes, PjBL also significantly hones student creativity. A study shows that the implementation of PjBL not only improves learning outcomes but also increases student motivation and creativity in learning activities (ResearchGate). Through involvement in projects, students are encouraged to develop original ideas and create real creative products, which are concrete indicators of their creative abilities (International Journal of Learning, Teaching and Educational Research). This is in line with the findings stating that creativity in science learning applied through PjBL also increases students' interest in learning, where high involvement encourages students to be more diligent and confident in the learning process (Munandar, in Dirlanudin).

In addition to learning outcomes and creativity, the PjBL model also facilitates the development of students' social skills. Through group work on projects, students practice cooperation, effective communication, and collaborative problem solving, which are important competencies in the context of 21st century learning (Journal of Social Studies and Humanities). Comparison with conventional methods shows that students who learn using traditional models tend to experience boredom, while PjBL is able to create a more dynamic, interesting, and challenging learning atmosphere (Field observation at SD Negeri 2 Gegerung). Evaluation of creativity using an observation rubric provides a comprehensive

picture of the development of student creativity from various aspects, including personal aspects, processes, products, and learning environments (ScienceDirect).

Statistical analysis in this study confirmed the significant influence of the PjBL model on the science learning outcomes of fifth grade students, with a significance value of 0.04 <0.05. These findings strengthen empirical evidence that the PjBL model can be applied effectively to improve the quality of learning (Results of the research t-test). Meanwhile, the level of student creativity reaching 85.71% indicates that the majority of students can develop high creativity through this project-based learning (Results of creativity observation). The practical implications of these findings emphasize the importance of teachers in implementing learning models that stimulate students' creativity and critical thinking skills, especially in science learning that is applicative and exploratory in nature (Khoiri, Marinia, and Kurniawan, ResearchGate).

The development of the PjBL model needs to be adjusted to the characteristics and needs of students so that the learning process can be optimized. Thus, each student can actively contribute to the learning process and produce meaningful and relevant products (Maizar Azha). Other studies also show that the use of supporting technology in the implementation of PjBL can enrich the learning experience and further enhance student creativity, especially in this digital era (ScienceDirect). However, the implementation of PjBL faces several challenges, such as teacher readiness and the availability of adequate facilities and infrastructure, which are important factors for the learning process to run effectively and efficiently (Apriany, Winari, and Muktadir).

These findings indicate that the implementation of the PjBL model as a science learning method at the elementary school level has great potential to improve student learning outcomes and creativity. This is in line with the goals of national education which expect the creation of a creative and competitive generation at the global level. Therefore, it is recommended that the implementation of this learning model be further developed and supported by policies and intensive training for teachers to overcome various obstacles in its implementation, so that optimal benefits can be achieved.

CONCLUSION

Based on the research that the researcher has conducted and based on the results of data analysis, it can be concluded that the use of the Project Based Learning model has a significant influence on the learning outcomes of grade V students of SD Negeri 2 Gegerung Bener Meriah. Where *thitung* < *ttabel* is 0.04 < 0.05. Thus Ho is accepted and Ha is rejected. Student creativity is obtained for each indicator varies where the student's originality indicator gets a percentage of 85%, the student's elaboration indicator gets a percentage of 82%, the student's flexibility indicator gets a percentage of 87%, the student's fluency indicator gets a percentage of 80%, and the student's assessment indicator gets a percentage of 91%. While the level of student creativity classically reached 85.71%, thus it can be said that the level of student creativity in this study was at a very creative level. This proves that the Project Based Learning model has an influence on student creativity.

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