

The Influence of the Project Based Learning Model to Improve Students' Creative Thinking Skills in IPAS Subjects in Class IV of UPTD SD Negeri 124401 Pematangsiantar

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Abstract

This study aims to determine the effect of the Project Based Learning model on improving students' creative thinking skills in the Natural Sciences subject with the material "My Indonesia is Rich in Culture" in class IV of UPTD SD Negeri 124401 Pematangsiantar. The research used an experimental method with a One Group Pretest-Posttest Design. The research sample consisted of 25 fourth-grade students. The research instrument was an essay test that had been validated by two validators with high content, construct, and language validity results (Aiken 0.80 V 1.00). The results showed that the average pretest score was 48.08 and the posttest score was 88.00, with an N-Gain value of 0.7832, which is considered high. Thus, the Project Based Learning model is effective in improving students' creative thinking skills in science learning.

Keywords: Project Based Learning, Creative Thinking, IPAS, Elementary School

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Introduction

Education is a key factor driving a nation's progress. One aspect related to education is learning (Ria et al., 2024). Education and learning are two distinct concepts, yet closely related and interconnected (Dayana et al., 2021). The development of education from time to time has always shown positive transformation, one of which is learning in the 21st century. 21st-century learning emphasizes students' skills related to learning and creativity, skills in using technology, and ownership of life skills (Siskawati et al., 2020). The competencies required in the 21st century include critical reasoning, creative thinking, collaboration, and communication (Mardhiyah et al., 2021).

One of the curricula in the 21st century is the independent curriculum, where the independent curriculum aims to maximize intracurricular learning, one of which is implementing project-oriented learning (Tuerah & Tuerah, 2023). The independent curriculum has 6 main characteristics in the Pancasila Student Profile, namely believing in God Almighty, having noble morals, having unity in diversity, mutual cooperation, critical and creative reasoning, and being independent.

Creative thinking is a process by which individuals discover new ideas or concepts that have not yet been realized and are still in their minds. Individuals can be said to be thinking creatively, characterized by the emergence of new ideas/concepts from the results of their thinking (Taufek, 2023). Creative thinking can also be interpreted as the ability to see things from a different and solution-oriented perspective when facing a problem (Pusparadi et al., 2024). (With creative thinking skills, students can learn to think more broadly in solving a problem and encourage them to share ideas with full confidence



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(A. T. Utami et al., 2025). The indicators of creative thinking skills according to (R. W. Utami et al., 2020) are fluency, flexibility, novelty, and elaboration.

Elementary school students need to have creative thinking skills because it will make students have high intrinsic motivation in learning, have self-confidence, and the creative thinking skills that students have will be provisions in the future because life is always faced with a problem so creative ideas are needed to overcome and solve these problems (Aflah et al., 2023). In reality, this condition is the opposite of the actual situation on the ground. This is supported by the statement put forward by (Sulistiyowati, 2023) that students' creative thinking abilities are less visible and do not receive full support. This is evident in the learning activities that occur, where students appear passive in expressing their ideas and are still fixated on examples shown or in textbooks. This is proven by the results of studies of Indonesian students participating in the Trends in International Mathematics and Science Study (TIMSS) in 1999, 2003, 2007, 2011, 2015 and the Programme for International Student Assessment (PISA) in 2000, 2003, 2006, 2009, 2012, 2015, and 2018 with the results not showing much change in each participation. Based on the TIMSS results, it was stated that the level of creative thinking ability of Indonesian students is relatively low, because only 2% of Indonesian students can work on high and advanced category questions that require creative thinking skills to solve them (Hasanah, 2021).

In line with this statement, data obtained from observations and interviews with fourth-grade homeroom teachers demonstrates that students' creative thinking skills in the science subject have not yet met the learning objectives. This is evident from the results of the science subject scores, which predominantly fall below the minimum competency (KKTP), namely 70. It can be seen in the table above that the results of the scores for creative thinking skills in the fourth grade science subject at SD Negeri 124401 are still low. This is based on the average percentage of students being 40% of 25 students in the category of having completed learning and 60% of 25 students in the category of not having completed learning. The factors that influence the low level of creative thinking skills are that in learning activities, students are less active and easily bored, students lack understanding of science learning, teachers have not implemented innovative learning models, so that the results of science in the Mid-Semester Assessment are still low, which is driven by the low level of creative thinking skills of fourth-grade students at SD Negeri 124401, characterized by students who find it difficult to express opinions, thoughts, or concepts based on personal understanding of science subjects.

Low creative thinking skills make it difficult for students to discover new ideas, concepts, and opinions. Inappropriate learning models can lead to students being less enthusiastic during the learning process and becoming more passive, as the teacher remains the center of learning. This can lead to low creative thinking skills (Ria et al., 2024). The solution to improve creative thinking skills in grade IV at SD Negeri 124401 is that teachers use learning models with current conditions to achieve existing competencies. According to (Helmiati, 2021), a learning model is a form of learning that is depicted from beginning to end, presented in a unique way by the teacher. Using a model makes it easier for educators to carry out learning activities from beginning to end. By using a model, it makes it easier for educators to carry out learning activities from start to finish. However, in implementing learning models to improve creative thinking skills in class IV of SD Negeri 124401, attention must still be paid to the material. The model applied is the Project Based Learning model in the science learning of the material My Indonesia is rich in culture.

With the Project Based Learning model, it can improve creative thinking skills in students and increase student understanding (Anggraini & Wulandari, 2021). According to (Putra & Siswoyo, 2024), the Project Based Learning model is an approach that requires students to complete a project or result that culminates in a final result. In addition, the project-based learning model can emphasize student actions such as collecting data and applying it to create something useful for personal life (Faizal et al., 2024). According to (Suhelayanti, 2023) the Project Based Learning learning model can help students by acquiring new concepts, new experiences, and can increase students' creativity in solving or solving a problem or in producing a product or work.

According to Maysyaroh & Dwikoranto (2021), there are several advantages and disadvantages of project-based learning, such as: (1) Increasing students' enthusiasm for learning, (2) Improving students' skills in solving problems, (3) Making students more proactive. Meanwhile, the weaknesses are: (1) In group work, there are difficulties in involving all students in working on the project, (2) The project requires quite large costs for its implementation, (3) Adequate facilities and equipment are required to carry out the project well. According to (Anggraini & Wulandari, 2021). the steps in the

Project Based Learning model are as follows: (1) determining basic questions, (2) designing project planning, (3) preparing a schedule, (4) monitoring students and project progress, (5) testing results, and (6) evaluating experiences. Project-oriented learning is a learning process that emphasizes student understanding. Students analyze, interpret or conclude, and communicate information or information meaningfully. The Project Based Learning model is expected to improve students' creative thinking skills. The Project Based Learning model is a learning model that applies problems as the initial step in acquiring new knowledge based on concrete life activity experiences (Aulia et al., 2024)

Based on the problems above, this research focuses on the Project Based Learning model and the creative thinking skills of class V science students of SD Negeri 124401 Pematangsiantar.

Methodology

This study uses a quantitative approach with a One Group Pretest-Posttest Design experimental design. The population in this study was all fourth grade students of UPTD SD Negeri 124401 Pematangsiantar, totaling 25 people. The sampling technique used total sampling, meaning that all fourth grade students were used as research samples. Inclusion criteria include students being present and actively participating in learning activities and projects. Exclusion criteria were students who were absent from more than two meetings or did not complete the assigned project. The independent variable in this study is the Project Based Learning (PjBL) learning model, while the dependent variable is students' creative thinking skills in the science subject with the theme "My Indonesia is Rich in Culture." The Project Based Learning learning procedure is carried out during one meeting, with a duration of 3 x 30 minutes. Learning follows the six steps of the PjBL model (Anggraini & Wulandari, 2021), namely: Determining fundamental questions or problems, Planning project activities, Preparing a project implementation schedule, Monitoring project progress, Testing or evaluating project results, and Reflecting on learning experiences. In this activity, the teacher acts as a facilitator who guides students in designing and developing a pop-up book project with an Indonesian cultural theme. Students work individually to create pop-up books that combine elements of art, creativity, and science knowledge. Project assessment is carried out using a creative thinking skills assessment rubric based on four indicators according to (R. W. Utami et al., 2020), namely: Fluency: the number of ideas generated, Flexibility: the diversity of ideas and approaches, Originality: the uniqueness of the ideas that emerge, Elaboration: the completeness and detail of ideas. The research instrument was validated by two expert validators using Aiken's V formula, with content, construct, and language validity results of 0.80-1.00, indicating validity criteria. Data analysis was conducted using the N-Gain test to measure the improvement in students' creative thinking skills between the pretest and posttest results.

Results and Discussion

From the results obtained by researchers, students experienced changes in the learning process, students were more active and involved in the learning process. Especially when implementing the Project Based Learning model, students are active in providing their creative ideas to create interesting work in using the Project Based Learning model. This is also in accordance with the opinion of (Siagian et al., 2024) that creative thinking is a process used when we come up with a new idea. This is also in accordance with the opinion of (Suhelayanti, 2023) that the Project Based Learning learning model can help students by acquiring new concepts, new experiences, and can increase students' creativity in solving or solving a problem or in producing a product or work.

This research was conducted in fourth grade at the UPTD of Elementary School 124401 Pematangsiantar. This research used a one-group pretest-posttest design with 25 students. The first thing that was done in this research was the validation of the questions by 2 validators consisting of 1 lecturer and 1 teacher, after the questions were declared suitable, a pretest could be given to students in order to determine the students' creative thinking abilities before using the Project Based Learning model. Researchers calculated the content, construct, and language validation scores using the Aiken V formula to determine its suitability for use in creative thinking research instruments. The formulas used to calculate the content, construct, and language validation scores are as follows:

$$v = \frac{\sum S^I}{n(C - 1)}$$

The following are the results of the content, construct, and language validity tests using Aiken V:

Table 1 Content Validity Test

Validation aspect	Aiken's value	Category
Isi	1	High Validity
Konstruk	1	High Validity
Bahasa	1	High Validity

(Source: Microsoft Excel 2010)

Based on the content, construct and language validation table, the values obtained are in the range of $V \geq 0.80$ in the high category, which indicates that the questions used are included in the valid category or have a high category level.

Table 2 Criteria for the level of validity of content, construct, and language

Aiken	Criteria
$0.80 \leq V < 1.00$	Tall
$0.60 \leq V < 0.80$	Enough
$0.40 \leq V < 0.60$	Low
$0.20 \leq V < 0.40$	Very low

Based on the results of the instrument testing conducted by the validators, it can be concluded that the assessment scale is valid and suitable for use as a research instrument. After the validation process was completed, the research was then implemented in the fourth grade of the UPTD of SD Negeri 124401 Pematangsiantar.

Creative thinking ability data is assessed based on the results of students' scores in answering creative thinking ability tests in the form of pre-test and post-test questions so that students' creative thinking ability scores are obtained. The pre-test used 10 essay questions before the learning was carried out with the aim of determining students' initial creative thinking abilities on the material My Indonesia is Rich in Culture. The pretest was given on August 11, 2025 in class IV of UPTD SD Negeri 124401. The assessment of student learning completion was based on KKTP (Criteria for Achieving Learning Objectives), namely 70.

Then, learning was carried out in Chapter 6 of My Indonesia is Rich in Culture with the topic "Indonesia's Cultural Wealth" using the Project Based Learning learning model. After the learning is carried out, a post-test is carried out to determine the students' abilities after implementing the Project Based Learning model. The test results showed that the average pretest score was 48.08 and the average posttest score was 88.00. The data results can be seen in the image below:

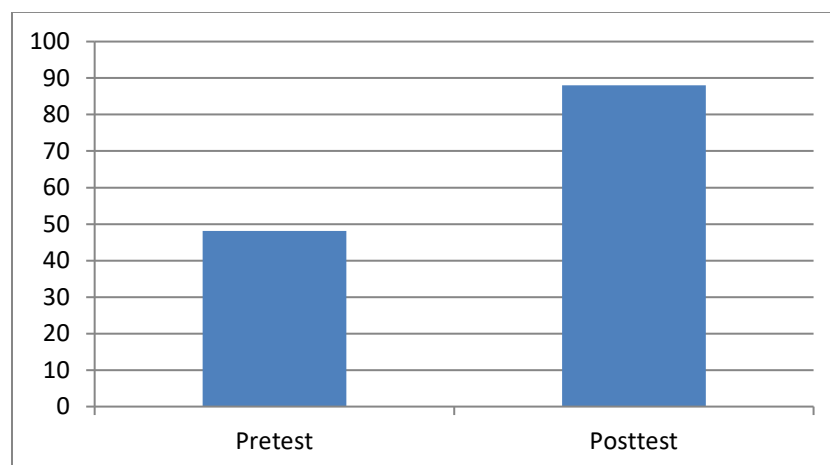


Figure 1. Graph of Pretest and Posttest Results

From the graph it is clear that all students experienced an increase in post-test scores compared to the pre-test. Initially, most students' pre-test scores were in the 20–50 range, with only a few students scoring above 70. Data analysis using the N-Gain Test shows that the average normalized gain score is 0.78, which is classified as effective with a high category.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Skor	25	.48	.93	.7832	.12794
NGain_Persen	25	47.76	92.86	78.3207	12.79433
Valid N (listwise)	25				

(Source: Output SPSS 26)

Table 7. N-Gain Grouping Criteria

Presentation N-Gain	Classification
0, $7 \leq \text{N-gain} \leq 1$	Tall
0, $3 \leq \text{N-gain} < 0, 7$	Currently
$\text{N-gain} < 0, 3$	Low

Based on the table above, it can be seen that the N-Gain Score result is 0.7832 with a high interpretation and the N-Gain percent is 78.32 with an effective interpretation. So it can be concluded that the influence of the Project Based Learning Model to improve creative thinking skills in the science learning material of fourth grade students of UPTD SD Negeri 124401 when viewed from the interpretation can be classified into the effective category.

This shows that the implementation of the Project Based Learning model has succeeded in improving students' creative thinking abilities compared to before. These results are also supported by previous research which shows an increase in students' creative skills with the Project Based Learning model.

Conclusion

Based on the results of the research that has been carried out with a sample of 25 fourth-grade students of UPTD SN Negeri 124401, this study can be concluded that there is an influence of the Project Based Learning model on creative thinking skills in the science learning material of fourth-grade students of UPTD SD Negeri 124401. This is proven by the N-Gain Test showing that the average Pretest was 48.08 and the average Posttest was 88 where the lowest N-Gain Score was 0.48 and the highest N-Gain Score was 0.93, thus obtaining a gain of 0.78. This means that the class experienced an increase in creative thinking skills with a high category because $(g) \geq 0.70$. Based on these data, it is concluded that the implementation or use of the Project Based Learning learning model has succeeded in increasing students' creative thinking skills compared to before.

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