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The Effectiveness of the Project-Based Learning Model in Enhancing 21st Century Competencies of Creative Thinking in Eighth-Grade Students on National Identity and Culture at SMP Negeri 1 Kebasen

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ABSTRACT

This study aims to determine the effectiveness of the Project-Based Learning (PBL) model in enhancing 21st-century creative thinking competencies on National Identity and Culture. The research used a quasi-experimental method with a nonequivalent control group design. The sample consists of Grade VIII A as the experimental group and Grade VIII B as the control group. Data collection techniques used tests, questionnaires, observations, and documentation. The data were analyzed using paired sample tests and independent sample t-tests, indicating a result of 0.000 (p 0.05); the Project-Based Learning model effectively enhances students' creative thinking. This is further evidenced by the N-Gain test results, with the experimental group achieving 57% in the moderately effective category and the control group achieving 20% in the ineffective category. Additionally, the effect size test results show a value of 4.456663, which falls into the very high category.

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1. INTRODUCTION

The influence of globalization touches on various life problems, one of which is education. The world of education is expected to have the option to develop 21st century skills. The 21st century demands global competence from students. Over time, students need to develop four skills: critical thinking, creative thinking, collaboration, and communication, which is defined as the 4Cs. Creative thinking skills are one of the skills that must be developed by students. In the educational environment, creative thinking skills are the most important skills needed by students to prepare for various conditions in the future. Indonesia is ranked 115th out of a total of 139 countries included in the 2015 Global Creativity Index (GCI) list, which is at a very low level when compared to other countries. Students' inability to find various creative solutions and answers to questions shows creative thinking skills which are the root of the problem of low creative thinking skills (Pulungan, 2023, .423).

According to Shofi et al., (2018) in Khoerudin et al., (2023,.28) there are still students who have difficulties in developing their creative thinking skills, according to research findings that explain that teachers' inability to ask different questions and inaccuracies in choosing learning models can contribute to low levels of creative thinking. A learning environment that puts students in a comfortable position can help develop students' creative thinking skills. This ability is formed to plan and solve a problem by making improvements or changes, as well

as being able to get innovative ideas. The ability to think creatively has several indicators, according to Sumarmo (2015) in (Nurhanifah, 2022, .163), students must think fluently, flexibly, originally, and elaboratively. Fluent thinking An individual can come up with many ideas, provide answers, and solve problems, which shows fluent thinking. Flexible thinking is the skill to come up with many different ideas, answers, or questions Creative thinking is the skill of individuals to think of new and creative ideas or find unusual ways to combine common things. Elaboration refers to the capacity to expand the concept of others. As a result, if students' creative thinking capacity decreases, their development is uneven, flexible, original, or elaborated, making it difficult for students to explore their ideas and solve problems that do not have a solution. One of the ways to support students in developing their creative thinking skills is to make learning more relevant and meaningful for students. The PjBL (Project Based Learning) model is one of several learning recommended by the Merdeka Curriculum today, but teachers have never used it in the classroom.

A project-based learning model is needed to achieve this. One of the learning models that can develop creative thinking skills is the Project-Based Learning (PjBL) learning model. According to Wena (2007,.138) in Mega Farihatun et al., (2019,. 638) Project Based Learning (PjBL) is a learning model that provides opportunities for teachers to be able to manage learning in the classroom by involving project work. The project-based learning model was chosen on the grounds that this learning model straightforwardly involves students in complex problems, problems that exist in reality, where students can choose and decide on problems or issues that are important to them. In this case, the project refers to the task of designing, implementing, and reporting activities orally or in writing using data.

A learning environment that is able to put students in a pleasant position for students is very important to develop creative thinking skills. This ability includes the ability to design and solve a problem by making changes or improvements and coming up with new ideas. A new approach to project-based education learning model. Incorporate a number of important strategies for success in the 21st century. The Project Based Learning model is a learning strategy that according to a number of studies can encourage students to use creative thinking, problem-solving skills and interaction to help solve real problems. Through the use of real-world problems related to Pancasila Education subjects, the Project Based Learning model has the potential to increase student motivation, process, and learning achievement.

Through this project's work-learning process, students' creativity and motivation will increase. The project-based learning model was chosen on the grounds that this learning model straightforwardly involves students in complex problems, problems that exist in reality, where students can choose and decide on problems or issues that are important to them. Source: Hosnan., (2014,.325) in Pratiwi, et al., (2020,.381) stated that the project-based learning learning model consists of 6 steps: deciding on the project to be done, students analyze the project with the guidance of the teacher; product planning; prepare a schedule for creating a project; monitor the activity and development of the project; present the results; and assessment and evaluation of project results.

The research conducted by (Mulyana et al., 2022) is entitled "Implementation of the Project Based Learning Model in Improving Creative Thinking Skills". The following research was carried out at SMPN 4 Tarogong Kidul, based on the results of a preliminary study showing that the creative thinking of students at SMPN 4 Tarogong Kidul is not optimal, this is because the PjBL learning model has not been implemented. The research model used in the following study is an experiment and the following research uses a quantitative approach. This study was conducted to find out how effective the Project Based Learning model is on the creative thinking ability of grade VIII students in the National Identity and National Culture material of SMP Negeri 1 Kebasen.

2. RESEARCH METHOD

The research method used in the following study is quasi-experimental and is designed to test the hypothesis regarding the effectiveness of the Project Based Learning learning model. By using two related classes, the experimental and control classes. The PjBL learning model is implemented in the experimental class, while the conventional learning model is used in the control class. The design used in the following study is a quasi-experiment through the form of a nonequivalent control group design. This design is similar to the pre-test-post-test control group design, but the experimental and control groups are not randomly determined. The experimental class and the control class are the two groups of samples used in the following study. The data sources used are primary data sources and secondary data sources.

The prerequisite tests used in this study are divided into the Normality Test; Homogeneity Test and Hypothesis Test. Data analysis uses the n-gain test to determine the difference between the Pre-test score and the post-test score. The N-Gain test is to determine the effectiveness of the Project Based Learning learning model compared to the conventional learning model and uses the effect size which is a measure of the effectiveness of a variable relative to other variables. The effect size test is used to determine the effectiveness of the Project Based Learning learning model on creative thinking skills**.**

3. RESULT AND DISCUSSIONS

1) Normality Test

Using *SPSS 25*, *the Kolmogorov-Smirnov* and *Shapiro-Wilk* tests were used as normality tests in this study. If the significance value is greater than 0.05, the data is considered normal (Sig. > 0.05).

Table 1. Results of the Normality Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Kelas		Statistic	df	Sig.	Statistic	Df	Sig.
Hasil	Pretest Kontrol	.170	34	.014	.930	34	.032
	Posttest Kontrol	.138	34	.097	.966	34	.359
	Pretest Ekesperimen	.168	34	.016	.945	34	.087
	Posttest Eksperimen	.145	34	.067	.952	34	.139

a. Lilliefors Significance Correction

The *pre-test* and *post-test* results of the experimental class and control class were normal, and the significance value of *the Kolmogorov-Smirnov* and *Shapiro-Wilk* results was greater than 0.05 (2-tailed), indicating that the data were normally distributed.

2) Homogeneity Test

Using the results of *the post-test of* the experimental and control classes, this homogeneity test was processed with *SPSS 25*. It is considered to have a homogeneous variant if the significance value of *Based on Mean* is greater than 0.05, in accordance with the criteria used to draw conclusions.

Table 2. Homogeneity Test Results

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Hasil *Creative Thinking*	Based on Mean	.752	1	66	.389
	Based on Median	.478	1	66	.492
	Based on Median and with adjusted df	.478	1	64.138	.492
	Based on trimmed mean	.756	1	66	.388

Based on the results of the homogeneity test in the table above, the significance value (2-tailed) of the *Based on Mean* is 0.389> 0.05, it can be concluded that the data is distributed homogeneously.

3) Uji Hipotesis

Because the data is normally distributed, this study uses *the Paired Sample T-Test* and *the Independent Sample T-Test* to test the hypothesis. The *Paired Sample T-Test* was used to determine the average difference between two paired samples and to find out whether the *Project Based Learning* learning model had an effect on *students'* creative thinking.*SPSS 25*. used to obtain the Paired *Sample T-Test*.

Tabel 3. Hasil *Paired Sample T-Test*

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest Eksperimen - Posttest Eksperimen	-3.500	1.462	.251	-4.010	-2.990	-13.963	33	.000
Pair 2	Pretest Kontrol - Posttest Kontrol	-5.471	2.699	.463	-6.412	-4.529	-11.817	33	.000

In the variable of *Creative Thinking ability*, the output result of pair 1 obtained a Sig. (2-tailed) value of 0.000 < 0.05, so it can be concluded that there is a difference in the average results *of the control class pre-test* and *the control class post-test*. Meanwhile, from the results of pair 2, the value of Sig. (2-tailed) was obtained of 0.000 < 0.05, meaning that HO was rejected and HA was accepted, so it can be concluded that there is a difference in the average results of *the experimental class pre-test* and the *experimental class post-test*. Meanwhile, *the Independent Sample T-Test* was used to determine the comparison between the results of *the post-test* of the experimental class using the *Project Based Leaening learning model* and the results *of the post-test* of the control class using conventional learning. The following are the results of the calculation of *the Independent Sample T-Test* with the help of *SPSS 25*.

Tabel 4. Hasil *Independent Sample T-Test*

		Levene's Test for Equality of Variances		T-test for Equality of Means					
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confid Interval of Differen Lower
Hasil Belajar	Equal variances assumes	752	.389	11.829	66	.000	6.676	.564	5.550
	Equal variances not assumes			11.829	64.655	.000	6.676	.564	5.549

From the output results above, because the *variables of creative thinking* data are distributed homogeneously, the data from *the independent sample test* results can be seen from *equal variances assumed*, resulting in a value of sig (2-tailed) of 0.000 < 0.05, so it can be concluded that there is a significant difference between the *post-test* results of the experimental class that uses *the Project Based Learning* learning modelwith a control class that uses conventional learning models. In addition, the average value between the experimental class and the control class can be seen from the table below:

Tabel 4.40 *Group Statistics*
Group Statistics

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Hasil *Creative Thinking*	Posttest Eksperimen	34	85.18	2.153	.369
	Posttest Kontrol	34	78.50	2.489	.427

From the data above, the mean value of the experimental class was 85.18 and the mean value of the control class was 78.50. This shows that the average score of the experimental class is higher than the average score of the control class, meaning that HA is accepted and HO is rejected, so it can be concluded that *the Project Based Learning* learning model has an effect on *students'* creative thinking.

4) Uji N Gain

The researcher conducted the N-Gain test in addition to testing the hypothesis to find out the difference in results before and after the test. The purpose of this N-Gain test is to compare *the Project Based Learning* learning model with the conventional learning model.

Table 5. N-Gain Test Results of Experimental Class and Control Class

Class	N-Gain Score	Category	N-Gain Present	Category
Experimental Classes	0,57	Keep	57%	Quite Effective
Control Classes	0,20	Low	20%	Ineffective

The conclusion that can be drawn from the table above is that the experimental class and the control class are different. The experimental class obtained an average current N-Gain score of 57%, which is included in the category of quite effective, with an average N-Gain score of 0.57, included in the moderate category. On the other

hand, the average N-Gain score test result is 20% which is included in the ineffective category, and the average N-Gain score test result is 0.20 which is included in the low category.

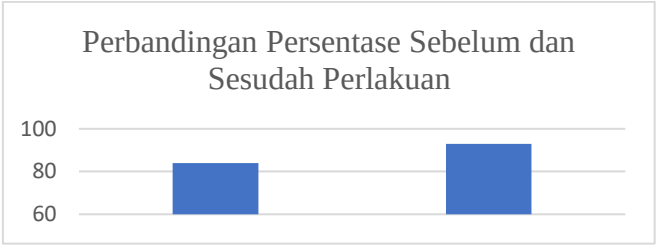
5) *Effect Size*

The purpose of this *effect size* test is to find out how well *the Project Based Learning* learning model improves *creative thinking skills*.

Table 6. Results of Effect *Size Calculation*

Kelas	Kelas Rata-Rata *Post-Pre*	Pre Standar Devisiasi	*Effect Size*	Kategori
Eksperimen	14	3,18	4.456663	Sangat Tinggi
Kontrol	6,5	12,48	-	-

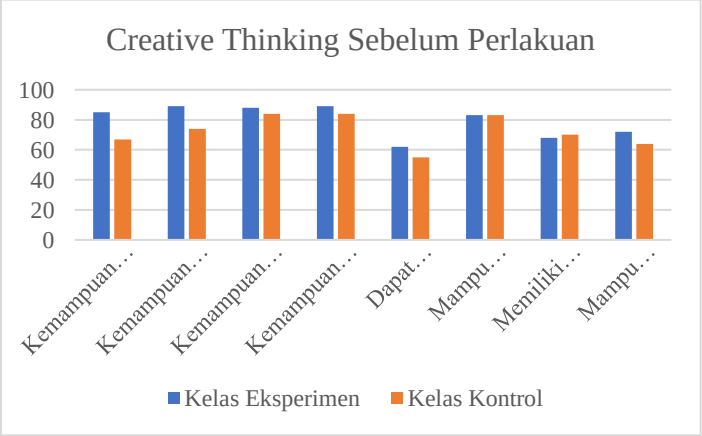
Based on the results of the table above, it can be seen that *the effect size* of the Project Based Learning *model* in shaping students' *creative thinking* skills is 4.456663, from which it is included in the category of very high influence. It can be concluded that the *Project Based Learning* model has a very high influence in shaping *the creative thinking* of grade VIII students of SMP Negeri 1 Kebasen on the material of National Identity and National Culture. The improvement in the implementation of *the Project Based Learning* learning model before and after the treatment can be seen in the following graph:



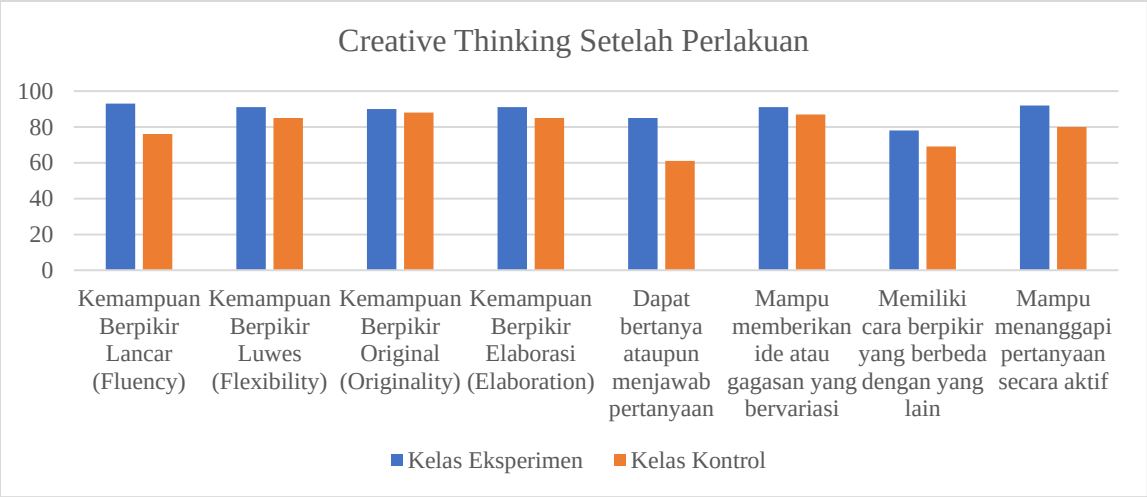
Graph 1. Treatment of *Project Based Learning Learning* Model Before and After Treatment

The graph explains that the experimental class before receiving treatment obtained an average of 84% while after the treatment obtained an average of 93%, which means that learning using *the Project Based Learning* learning model has an effect on students, this is evidenced by the average of students before treatment and after treatment the results obtained are higher on average.

This Project Based Learning *learning model* is effective for students' *creative thinking* skills in the National Identity and National Culture material. To be able to measure students' *creative thinking* ability, it is to use a *likert scale* questionnaire which contains statements related to indicators of *creative thinking ability*. Based on the results of the descriptive analysis of the variables of *creative thinking ability*, there was an increase in the results of *the post-test* and for the experimental class, higher results were obtained compared to the control class. This can be seen in the following graph:



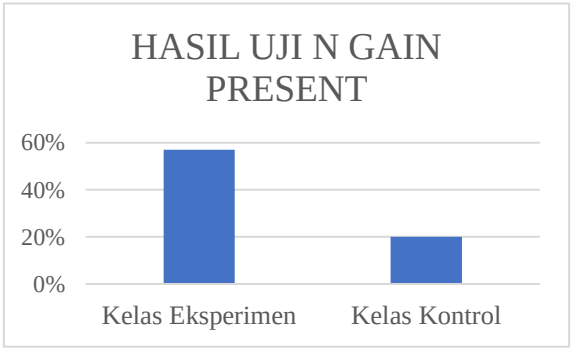
Graph 2. Students' *Creative Thinking* Ability Before Treatment



Graph 3. *Creative Thinking* Ability After Treatment

The two graphs show that there are differences in students' responses to *creative thinking* skills in the National Identity and National Culture material before and after receiving treatment. Students in the experimental class who applied the *Project Based Learning* learning model obtained higher scores compared to students in the control class who used the conventional learning model or lectures. According to the opinion (Titu., 2015, .179) which discusses the advantages of *the Project Based Learning* learning model. These advantages include an increase in students' motivation to learn.

The project-based learning model involves students in various learning exercises and efforts to implement projects, while the results of the assignment make students excited in conducting learning exercises. In addition, the use of a project learning model can increase student collaboration in group activities in a team, which provides many benefits, including improving cooperation, communication, and exchange of ideas in project creation. In addition, it can improve problem-solving skills, where students are directly involved in the problem-solving process during the learning process. The N-Gain score test is carried out after the hypothesis test to find out the difference in results before and after the test. The comparison of N-Gain present of the experimental class and the control class is as follows:



Graph 4. Comparison of N-Gain Present in the Experimental Class and Control Class

The graph above results in the N-Gain test in the experimental class of 57% included in the very strong class, while for the control class the result of 20% is included in the ineffective classification. The adequacy of the use of *the Project Based Learning* model must be seen in the average increase in higher scores. With the gain score of the experimental class of 0.57 and the gain score of the control class of 0.20, the experimental class obtained a higher average than the control class.

A learning environment that puts students in a comfortable position can help develop their creative thinking skills. In PPKn learning, the low level of creative thinking of students can be overcome through the use of *the Project Based Learning* (PjBL) learning model. This model can foster a more active and productive learning environment where learners are more involved in the process of asking questions, collaborating on projects, and presenting their final results.

This also has a significant impact on the learning process involving all students. In this case, a provisional conclusion can be drawn from this study, namely that the *Project Based Learning* learning model is quite

effective in shaping *students' creative thinking* skills in the National Identity and National Culture material at SMP Negeri 1 Kebasen. This is shown based on the results of the comparison between the experimental class and the control class, where the experimental class obtained higher results and an improvement in the learning process compared to the control class.

4. CONCLUSION

Based on the percentage of results before using the *Project Based Learning* learning model , which was 84%, the percentage increased to 93%, after the implementation *of the Project Based Learning* learning model, the use of *the Project Based Learning* learning model in the learning process has increased.

Students of SMP Negeri 1 Kebasen develop *creative thinking* skills through the use of *the Project Based Learning* model. A comparison of the results of the experimental and control classes shows this. The experimental class obtained a higher N-Gain score test result compared to the control class, by obtaining an N-Gain score of 0.57 which is classified as medium classification and an N-Gain value of 57% which is classified as very feasible, while in the control class it gets an N-Gain score of 0.20 in the low classification and N-Gain present of 20% which is in the inadequate classification. In addition, the effect size of 4.456663 shows that the *Project Based Learning* model has a significant influence on *students'* creative thinking skills.

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