# The influence of the PjBL model to results studying science in elementary school

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**ABSTRACT**
Learning outcomes is a parameter in evaluate achievements students at school. Assessments carried out by teachers in general No only understanding will material but also as reference in evaluate activity learning especially learning strategies in Science subjects in schools . Because in reality Lots elementary school experienced challenge in increase performance Study students in the subject of Natural Sciences. The aim of study This is For analyze and evaluate to what extent does it influence implementation PjBL to achievements results learning science for students 6th grade elementary school . Research This done with approach quantitative method experiment simple with PJBL learning model intervention , implemented at SDN 02 Gersik with involving 35 students Class VI. The instrument is test Science questions . Analysis with using descriptive statistics (mean, median, mode, standard deviation). Research results shows the average value before treatment 58.29 and increasing to 78.57 after implementation .The median value also increased from sixty become eighty as well as mode value fifty increase become seventy. Based on the Wilcoxon signed rank test, the value Asymp. sigh .(2-tailed) of 0.000 is less than 0.05 which means there is change results Study before and after implementation PjBL . Research results prove that PjBL impact positive capable increase results learn science and technology in grade VI elementary school, so teachers are encouraged use it in activity learning in elementary school.

**Keywords**: Learning outcomes, PjBL, Science

## Introduction

Understanding results Study is indicator main For evaluate quality learning at school . Learning outcomes reflect ability student understand, master and apply the concepts taught. The low results Study (Nabillah & Abadi, 2019) become attention main teacher because can hinder objective learning . Low results Study influenced by several factors, including inadequate strategies appropriate (Siagian & Tanjung, 2012)and limited learning models ( Winarni & Astuti, 2024) besides That effectiveness learning also depends technique learning used by teachers (Kuntarto & Chan, 2021; Sojanah & Hadi, 2020).

The usual learning model implemented in schools often Not yet capable push student active and creative (Rian Ningsih Pramunita, 2021; Ridha et al., 2022). This cause understanding student to material limited and skills think critical student Not yet

develop optimally. Therefore, a learning model is needed that facilitates student in Study in a way real, collaborative and project (Muslimah & Agustina Tyas Asri Hardini, 2023; Natalia et al., 2023; Susetyadi & Utami, 2023).

A number of study prove that PjBL influential positive and effective in increase results Study (Sekar et al., 2023; Wati et al., 2023). This model positioning student become the main subject learning so that they design, implement and present project they (Susetyadi & Utami, 2023). PjBL No only push activeness and motivation learning (Ulfah et al., 2023), but also becoming methods that can increase creativity student (Luthfa Eka Saputri et al., 2023) as well as develop ability think critical (Saputra, O. & Rahayu, T., 2020).

Study more carry on confirm that PjBL play a role positive to results Study (Arif Rahman Hakim, 2024) , Even , PjBL based collaborative proven more effective , where students get more results Good as well as there is interaction between PjBL models to results learning (Panjaitan, 2019). In addition , other research also confirms existence differences (Adicondro & Anugraheni, 2022). According to (Talib, 2022) results Study play a role important in success of the learning process .

In PjBL , involvement student stages project started from identification problems , planning , implementation, up to presentation results can grow a sense of curiosity know, be responsible responsibility and ability finish problem in a way creative (Van Harling & Martono, 2023)(Andika & Anwar, 2023)also provides room for student For experiment, express ideas and integrate various draft knowledge in accordance local and cultural (Arif Rahman Hakim, 2024; Dwiantoro & Basuki, 2021)

However Thus , conditions in the field Still show low results Study students , especially in schools basic . (Annisa & Sholeha, 2021) find that results Study low often caused by monotonous learning , while teacher creativity also becomes factor determinant quality of the learning (Sojanah & Hadi, 2020)Research results (Siagian & Tanjung, 2012) . With Thus , there are gap study in the form of need For test in a way quantitative the influence of learning models PjBL and its implications to results Study student .

Based on description said , research This focused on analysis the influence of learning models PjBL to results students ' science learning sixth grade at school basic research This Study This in a way theoretical capable expand outlook study scientific about the relationship between learning models and achievement results learn . In a way practical , assessment This can become teacher guidelines in determine relevant learning models For increase quality cycle learning .

## Methods

Study This apply approach quantitative through method experiment simple . The research location is SDN 02 Gersik with the research subject student class VI, totaling 35 people. Entire population used as a research sample (total sampling). approach quantitative chosen For measure influence application of learning models to to results Study student.

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**Instrument study**

Instrument study This is science pretest and posttest questions work as tool measuring For evaluate progress Study student before given treatment and after given treatment. Then, the results analyzed using a difference test in pairs For see difference acquisition Study before and after intervention, if the data contributes normally, the Wilcoxon signed rank test is continued.

**Data Collection Techniques**

Data collection through tests that measure results Study student in the form of evaluation initial and assessment end . Pretest given before given treatment For know ability beginning student whereas posttest given after given treatment with objective know improvement results study. Then second test the used For evaluate effectiveness implementation of the PJBL learning model .

**Data Analysis Techniques**

Data analyzed through prerequisite tests in the form of a statistical test for test which learning model is the most dominant Then made chart For clarifying the many learning models liked as well as the median and mode for test increase in a way consistent after that is the normal test and Kruskal-Wallis.

**Results And Discussion**

The results of the pre-test and post-test data analysis show improvement results Study student in a way significant after given treatment . The average value increased from 58.29 to 78.57, median from 60.00 to 80.00, and mode from 50 to 70, with deviation standard relatively stable (12,001 → 12,636), indicating an even increase in most areas big student.

Although the result positive, research This limited to 35 students at one time school, so that ability For generalize findings Still limited. Research furthermore should using sample more big and design experiment more complex recommended For strengthen proof empirical.

**Table 1 Pretest and posttest results**

| | Before test | After test |
|---|---|---|
| mean | 58.29 | 78.57 |
| median | 60.00 | 80.00 |
| mode | 50 | 70 |
| Standard Deviation | 12.001 | 12.636 |

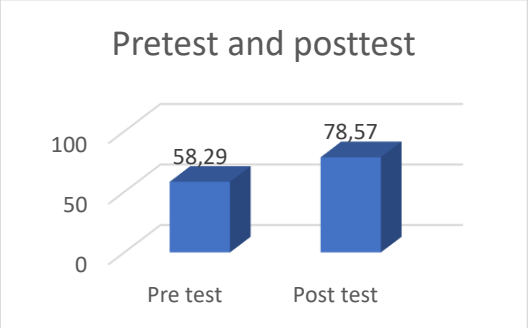


**Figure 1. Graph pretest and posttest**

This data serve existence difference before and after given treatment through learning models PjBL . Comparison table results Study show that the implementation of the PJBL model provides influence significant positive to results Study students ' grades student increase from 58.29 before implementation to 78.57 after implementation. The median value also increased from 60.00 to 80.00, indicating that part big student get improvement mark . The mode value which was originally 50 has increased to 70, indicating shift distribution mark to direction more tall .

**Table 2 Results of Normality Test of Learning Outcomes per Learning Model**

| | Kolmogorov-Smirnov [a] | | |
|---|---|---|---|
| pretest | statistics | df | sig |
| pretest | .215 | 35 | .000 |
| posttest | .208 | 35 | .001 |

The results of the Kolmogorov-Smirnov test produced a Sig. Value < 0.05 indicating that the data is not fulfil normal distribution . Based on Kolmogorov-Smirnov normality test analysis , results Study students on both group ( PjBL ) no normally distributed.

**Table 3 Rank**

| | | N | Mean Rank | Sum of Rank |
|---|---|---|---|---|
| Posttest-pretes | Negative ranks | **0[a]** | .00 | .00 |
| | Positive ranks | **35[b]** | 18.00 | 630.00 |
| | ties | **0[c]** | | |
| | total | 35 | | |

Referring to the results of the Wilcoxon Signed Rank Test, 35 positive ranks, 0 negative ranks, and 0 ties were obtained , which means all over student experience improvement results Study after implementation of the PjBL model . This give proof that the PjBL model proven give influence positive to improvement results Study student .

**Table 4 Test Statistics[a]**

| | Posttest - pretest |
|---|---|
| Z | -5.234[b] |
| Asymp.sig. (2- tailed) | .000 |
| | **a. Wilcoxon Signed Ranks Test** |
| | **b. Based on negative ranks** |

Referring to Table 4 above , the value Asymp . Sig. (2-tailed) same with 0,000 more small from 0.05, with thus : can it is said indicated give influence real between output Study students in condition beginning and conditions end implementation of the Project-Based Learning ( PjBL ) learning model .

Research result This show that PjBL more liked students (77.1%) and effective increase results learning (mean 58.29 → 78.57, Median 60 → 80, and mode 50 → 70). Improvement This show that almost all over student experience development results Study after implementing learning models PjBL . This is strengthened Wilcoxon signed rank test analysis indicated that 35 students experience increase ( positive rank = 35, negative rank = 0) refers to the value asymp.sig .(2-tailed) is 0.000 which is more small from 0.05 can stated there is change related results Study before and after PjBL used .

Findings the consistent with study previously stated PjBL effective help achievement Study student (Sekar et al., 2023) , is also proven increase creativity (Luthfa Eka Saputri et al., 2023; Sari et al., 2019)and ability think student (Saputra, O. & Rahayu, T., 2020). PjBL allows student involved active in activity meaningful , solution - oriented problem real and demanding involvement direct in design, implement as well as presenting project (Susetyadi & Utami, 2023).

In a way theoretical, improvement results Study through implementation PjBL influenced by involvement student in the learning process . Activities designing projects, collaboration , and integration knowledge knowledge in accordance local context for think critical (Andika & Anwar, 2023; Van Harling & Martono, 2023). PJBL also provides room For experimenting and expressing creative ideas so that grow a sense of curiosity know and be responsible answer to results Study (Arif Rahman Hakim, 2024; Dwiantoro & Basuki, 2021)However , research This own limitations , especially amount relative sample small (35 students in one class) school ), so that generalization results Still limited . Research advanced with sample more many and designs more experiments complex required For strengthen proof empirical .

In a way overall , study This indicates that PjBL classified and can categorized something approach dominant learning liked , relevant with need Study students , and effective in increase results learn , at the same time give guide practical For educator designing learning that is interactive , meaningful , and effective .

## Conclusion

Research result prove that implementation of the PJBL model provides significant contribution to improvement achievements Study Students in the Natural Sciences subject at SDN 02 Gersik. Pretest and posttest results show existence 34.8% increase . Data obtained in study This indicates that the PJBL model is capable in a way effective in increase results Study Because capable encourage students participate active, thinking critical, collaborative and creative through activity learning based contextual and meaningful projects . So that the PjBL model worthy recommended as alternative approach learning innovative and capable contribute in achievements performance Study students at school base .

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