



Project Based Learning Model with Differentiated Learning Strategies on Learning Achievement of Elementary School Students

Auliya Ayu Fatichah Sari^{1*}, Arif Mahya Fanny²

Universitas PGRI Adibuana Surabaya^{1,2}

Correspondence e-mail : aulyaya2880@gmail.ac.id

Abstract: This research is motivated by the learning process that is less than optimal for student learning achievement, this is due to the lack of learning models and strategies that are tailored to student learning needs. Teachers tend to use conventional learning models and lectures that make students bored faster and the learning needs of each student are not met optimally so that learning objectives do not reach the target. This research uses the Quasi Experimental method with a quantitative-based approach. The population in this study involved fourth grade students of SD Negeri Sedati Gede 2, and the sample of this study involved fourth grade students A with a total of 29 students and fourth grade students C with a total of 25 students. With the Posettest-only control research design used in two classes, namely the experimental class and the control class. Data collection methods/techniques in the form of test sheets with PJBL learning models with differentiated learning strategies that are applied through classroom learning such as the daily learning process. Based on the results of data analysis using SPSS version 25 with the Independent sample t test, it is known that the sig value. $0.000 < 0.05$ means that H_0 is rejected and H_a is accepted. So it can be concluded that the application of the Project Based Learning learning model with differentiated learning strategies has a significant effect on the learning achievement of elementary school students.

Keyword : Project Based Learning Model (PJBL), Differentiated Learning Strategy, Learning Achievement of Elementary Students.

Article info: Submitted : 2024-07-22 | Accepted : 2024-09-18 | Published : 2024-09-19

Copyright © 2024, Authors.

This is an open-access article under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)



How to Cite :

Introduction

Education in Indonesia has experienced many deteriorations so that the quality of education in Indonesia is at the lowest level and lags behind other countries (Kurniawati, 2022). The decline in the quality of education in Indonesia occurs due to many factors, one of which is due to the inefficiency of the education system. The development of education over time has increasingly encountered adjustments, one of which is in terms of learning strategies. The government's efforts to improve the quality of Indonesian education by organising curriculum changes, appropriate learning strategies, and implementing teaching tools to evaluate student learning outcomes (Himmah, 2021). Learning applied in Indonesia still tends to use monotonous learning, learning is more inclined to read, listen and memorise. Meanwhile, learning is not only reading, listening and memorising but learning is also shown by increasing the capacity, attitudes, behaviour, and skills that exist in individuals (Nurkumala, 2023).

In the independent curriculum, educators are required to be able to develop the right learning model to create effective and learner-centred learning (Nurkumala, 2023). Learning models are not only used as a reference to encourage students to actively participate in the learning process but can also facilitate the diversity of student characteristics (Lelono, 2022). The Project Based Learning (PJBL) learning method focuses on students and ensures learners' knowledge and skills develop (Utomo et al. 2020). Education must be a place for students to grow as a whole and independently, using the Project Based Learning (PJBL) learning model can be one of the efforts so that education can be a place to make students grow and be independent.

Differentiated learning is a series of meaningful and student-centred decisions made by teachers by creating a supportive learning environment, prioritising student needs, and organising an effective classroom. Thus, the independent curriculum has led to the implementation of differentiated learning as a form of effort in meeting students' learning needs by focusing on students to be able to create a comfortable learning environment, adjust to student needs, and make the classroom more organised and directed (Faiz at al, 2022). Differentiated learning does not mean learning separately according to student characteristics, but differentiated learning has the principle of how teachers vary and develop various learning innovations by adjusting the characteristics of different students so that students can absorb material optimally.

Based on the explanation above, the researcher intends to carry out research by further reviewing to obtain precise and reliable data related to the effect of using the Project Based Learning model with differentiated learning strategies on the learning achievement of grade 4 elementary school students in the IPAS subject matter of Indonesian Cultural Diversity. Therefore, based on the background explanation that has been conveyed, the researcher feels interested in conducting research entitled 'The Effect of Project Based Learning Model (PJBL) with Differentiated Learning Strategy on Learning Achievement of Elementary School Students.

Methodology

This research uses a quantitative approach with the type of research Quasi experimental (pseudo experiment). This research design uses a nonequivalent control group design with the Posttest-only control design type using two classes, namely the experimental class and the control class selected based on certain criteria. The population in this study were all 4th grade students of SD Negeri Sedati Gede 2 in the 2022/2023 school year, totalling 3 classes. The sample used in this study totalled 54 students, namely 29 students in class 4A and 25 students in class 4C of SD Negeri Sedati Gede 2. Class 4A as an experimental group that will be given treatment or intervention and class 4C students as a control group that is not given treatment or intervention. The data collection method used in the research is a test using a posttest in the form of an essay with 10 questions, then tested with a validity test which has the results of 8 valid questions and 2 invalid questions, reliability test, normality test, homogeneity test and hypothesis test which is carried out using Product. And Service Solution (SPSS software).

Result and Discussion

Result

The results of this study are descriptive statistics that aim to analyse and present quantitative data that aims to describe the characteristics of students who are used as research samples, descriptive statistics also aim to determine the average value (mean), median value, mode, maximum value, minimum value, and standard deviation. Data on grade IV students who meet the criteria for respondents in this study, namely from class IV-A totalling 29 students and class IV-C totalling 25 students. The following are the results of statistical analysis with the help of SPSS software version 25 which are presented as follows.

Table 1. Statistical Description of Student Learning Outcomes

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
PrestasiBelajar	54	49	45	94	75.31	14.582
kelompok	54	1	1	2	1.46	.503
Valid N (listwise)	54					

Table 1 shows that N the number of student respondents was 54 students consisting of 29 students in the experimental group and 25 students in the control group. Respondents from the two classes showed that the minimum and maximum posttest scores were 45 and 94. The mean value is 75.31, and the standard deviation value is 14.582. Thus from the table it can be seen that the average value (mean) is greater than the standard deviation so that it can be said that the results of this study are quite good.

The normality test in this study was carried out to determine whether the distribution of data on the posttest scores of classes 4a and 4c of SDN Sedati Gede 2 Sedati was normally distributed or not based on the posttest scores. Researchers used the Kolmogorov Shapiro-Wilk formula with the help of the Software Product and Service Solution (SPSS) computer programme to conduct a normality test. The following is a normality test with the help of software.

Table 2. Normality Test

Tests of Normality ^a							
	Hasil	Kolmogorov-Smirnov ^b			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
PrestasiBelajar	Eksperimen	.195	29	.006	.903	29	.011
	Kontrol	.204	25	.009	.941	25	.158

a. There are no valid cases for PrestasiBelajar when Hasil = .000. Statistics cannot be computed for this level.

b. Lilliefors Significance Correction

Based on the results of data processing, it can be said that the Sig of the normality test results in the experimental class is 0.011, so it is said to be abnormal because $0.011 < 0.05$. while the normality test result for the control class was 0.158. Based on the Shapiro-Wilk formula

criteria, it can be concluded that the data in this study is normally distributed because it has a significant value of more than ($>$) 0.05 so it can be concluded that **Ho is rejected, Ha is accepted.**

In this study, the homogeneity test was carried out to determine whether this study was homogeneous (of the same variance) or inhomogeneous using the F test with the help of the Software Product and Service Solution (SPSS) computer program.

Table 3. Homogeneity Test

		Levene Statistic	df1	df2	Sig.
PrestasiBelajar	Based on Mean	1.287	1	52	.262
	Based on Median	.457	1	52	.502
	Based on Median and with adjusted df	.457	1	43.391	.503
	Based on trimmed mean	1.270	1	52	.265

Based on the table above, it is known that the Sig value. Based on the mean of 0.265. From the results above it can be concluded that according to the homogeneity test criteria the sig value is more than ($>$) 0.05 so the data can be said to be homogeneous.

Hypothesis testing is carried out to determine whether there is a significant effect on the learning achievement of experimental class students who have been given treatment or treatment using the Project Based Learning learning model with differentiated learning strategies.

Table 4. Independent Sample 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% Confidence Interval of the Difference	
									Lower	Upper
Prestasi Belajar	Equal variances assumed	6.372	.015	13.118	52	.000	25.389	1.935	21.505	29.273
	Equal variances not assumed			12.645	37.581	.000	25.389	2.008	21.323	29.455

Based on the results of the Independent Sample Test hypothesis test above, Sig. (2-tailed) of 0.000 which means <0.05 , so there is a significant effect on the learning achievement of students who have been given treatment or intervention and those who are not given treatment or intervention. In accordance with the hypothesis test criteria if Sig. (2-tailed) < 0.05 then Ho is rejected and Ha is accepted, but if Sig. (2-tailed) > 0.05 then, Ho is accepted and Ha

is rejected. In the table above there is also a Mean Difference value of 25.389, this value shows the difference in the average learning achievement of experimental and control class students.

Discussion

From the explanation of the research results above, it can be said that the application of the project-based learning model (PJBL) with differentiated learning strategies is quite influential on student learning achievement because project-based learning models and differentiated learning strategies can meet the learning needs of each student. The Project Based Learning model is designed to improve students' skills and creativity while the differentiated learning strategy attempts to fulfil the learning needs of students with different learning styles and characteristics. The use of Project Based Learning model and differentiated learning strategy can improve the ability of knowledge (cognitive), attitude (affective) and skills (psychomotor) which can be seen through student learning achievement.

Project-based learning model is a teaching technique that uses projects to encourage students to be more active in learning activities so as to increase the understanding of the material optimally and as expected (Iswantari, 2021). In this study, it is proven that students can absorb the material more optimally by applying the Project Based Learning model so as to achieve the learning objectives as expected. Educators need to understand the characteristics and learning styles of diverse students to design learning that is relevant and meets the learning needs of each student so that by applying this differentiated learning strategy students can understand the material presented. This is evidenced in this study that there is a gap in Posttest scores, students who use the Project Based Learning learning model with differentiated learning strategies have superior posttest scores compared to the posttest scores of students who only use conventional learning.

In the Independent Sample Test test, it is known that the sig value is 0.000 so that the test results are said to be in accordance with the criteria that H_a is accepted if the sig value is <0.05 and H_a is rejected if $\text{sig} > 0.05$. In accordance with this test $0.000 < 0.05$, H_a is accepted so it can be concluded that there is an effect of the Project Based Learning learning model with differentiated learning strategies on the learning achievement of elementary school students.

Conclusion

Based on the results of research conducted on the experimental group that was given treatment or intervention and the control group that was not given treatment or intervention, there was a significant comparison in the posttest value between the classes, the posttest value of the experimental group was superior with an average of 86.28 compared to the posttest value of the control group with an average of 60.92. Based on the results of research data analysis using the Independent T-Test test processed with the help of the Software Product Service Solution (SPSS) computer program, it shows a significant increase in the posttest scores of students who are given treatment using the Project Based Learning learning model with differentiated learning strategies able to understand the material provided more optimally, so it can be concluded that the Project Based Learning learning model with differentiated learning strategies has an influence on the learning achievement of elementary school students.

References

- Adiniyah, Nurkumala, and Agus Prasetyo Utomo. 'Implementation of Project Based Learning Model Differentiated Based on Students' Learning Readiness on Immune System Material for Class Xi Senior High School.' *Journal of Educational Technology* 1.1 (2023): 9-9.
- Agustina, N. I. M., & Miyono, N. (2023, July). 34. Application of Project Based Learning Model to Improve Student Cooperation and Learning Outcomes through Differentiated Learning Approach at SDN Mijen 2 Demak. In *Proceedings of the National Seminar on Teacher Professional Education* (pp. 286-295).
- Ahdar, A., & Wardana, W. (2019). *Belajar dan pembelajaran: 4 pilar peningkatan kompetensi pedagogis*.
- Anggraini, P. D. (2021). Analisis Penggunaan Model Pembelajaran Project Based Learning Dalam Peningkatan Keaktifan Siswa. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*. 9 (2).
- Askuri, A. N., Wijayanti, A., Programme, I. D., Education, S., & Guru, P. (n.d.). Analysis of Learning Styles in Differentiated Learning Class IV SDN Tambakrejo 01 Semarang.
- Faiz, Aiman, Anis Pratama, and Imas Kurniawaty. 'Differentiated learning in the driving teacher programme in module 2.1.' *Journal of basicedu* 6.2 (2022): 2846-2853.
- Fajariyanti, K. W. K., Sumilat, J. M., Paruntu, N. M., & Poluakan, C. (2022). Analysis of the Application of Project Based Learning in Thematic Teaching. *Basicedu Journal*, 6(6), 9517-9524.
- Himmah, F. I., & Nugraheni, N. (2023). Analysis of Students' Learning Styles for Differentiated Learning. *Journal of Basic Education Research (JRPD)*, 4(1), 31.
- Irawati, I., Ilhamdi, M. L., & Nasruddin, N. (2021). Pengaruh Gaya Belajar Terhadap Hasil Belajar IPA. *Jurnal Pijar Mipa*, 16(1), 44-48.
- Kurniati, A., Wika Sari, A., Primary School Teacher Education Study, P., & Persada Khatulistiwa Sintang, S. (2019). Analysis of Student Learning Styles in Grade V Indonesian Language Subjects. *Journal of Perkhasa Basic Education*. In *JPDP* (Vol. 5, Issue 2).
- Lelono, Ragowo Sandhi. 'EVALUATION OF CHARACTER EDUCATION PROGRAMMES IN ISLAMIC SMP MATHOLI'UL FALAH BLORA CENTRAL JAVA PROVINCE IN 2021.' *Jl@ P* 11.1 (2022).
- Makki, M. I., & Aflahah, A. (2019). *Konsep Dasar Belajar Dan Pembelajaran*.
- Nahak, R. L., & Lawa, S. T. N. (2023). Pengaruh Pembelajaran Berdiferensiasi dalam Model Project Based Learning Terhadap Kemampuan Berpikir Kritis Siswa Kelas IV SDI Barai 2. *HINEF: Jurnal Rumpun Ilmu Pendidikan*, 2(2), 62-69.
- Nur, F., & Kurniawati, A. (2022). Meninjau Permasalahan Rendahnya Kualitas Pendidikan Di Indonesia Dan Solusi. In *AoEJ: Academy of Education Journal* (Vol. 13, Issue 1).
- Nurzaki Alhafiz Guru Bimbingan Dan Konseling SMP Negeri, O. (2022). Analisis Profil Gaya Belajar Siswa Untuk Pembelajaran Berdiferensiasi Di SMP Negeri 23 Pekanbaru. In *JCI Jurnal Cakrawala Ilmiah* (Vol. 1, Issue 5).

Utomo, Arief Cahyo, Zaenal Abidin, and Henry Aditya Rigiyanti. 'The effectiveness of project-based learning on scientific attitudes in PGSD students.' *Educational Journal of Bhayangkara* 1.1 (2020): 1-10.