Lectura: Jurnal Pendidikan
Volume 16, Nomor 1, Februari 2025, Halaman 266-279
P-ISSN: 2086-4876
E-ISSN: 2549-063X
DOI : https://doi.org/10.31849/lectura.v16i1.25764
Link : https://journal.unilak.ac.id/index.php/lectura/article/view/25764

The Effect of Project-based Learning Model on Science Learning Outcomes Reviewed from the Scientific Attitude

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Submitted: 23-01-2025 Accepted: 31-01-2025 Published: 14-02-2025

Abstract
Science is a combination of systematically arranged knowledge that discusses all matters of natural phenomena based on experiments, thoughts and observations carried out by a group of people. This study aims to determine the effect of the Project Based Learning model on the results of learning science in terms of scientific attitudes in grade V elementary school students in Cluster I, Gianyar District. The type of research conducted in this study is a quasi-experimental study with a posttest only control group design. The population of this study were all grade V in Cluster I, Gianyar District, students consisting of 281 students. A total of 83 students were selected as samples determined by random sampling techniques. The experimental class consisted of 43 people and the control class consisted of 40 people. Data collection used the multiple-choice objective test method to measure students' science learning outcomes and non-test methods in the form of instrument questionnaires to measure the level of scientific attitudes possessed by each student. Data were analyzed using ANOVA AB analysis. The results of the study showed the F coefficient between models (FA) is 107,964 with a significance level of 0.000 and the F coefficient of interaction between models and scientific attitudes (FAB) is 5,318 with a significance level of 0.026. Therefore, it can be concluded that the project-based learning model has an influence on the outcomes of science learning as seen in from the scientific attitude of grade v elementary school students in Cluster I, Gianyar District.

Keywords: Project-based learning model, science learning outcomes, scientific attitude

INTRODUCTION

The learning process is based on the interaction between teachers and students that takes place well through direct or indirect communication or through media. Interaction between teachers and students during the learning process requires support from learning components which include: (1) learning objectives, (2) teaching materials/materials, (3) learning methods and media, (4) learning evaluation, (5) students, and (6) teachers/educators (Yuliani, 2020). Education is learning that has been planned since the educator entered the classroom until the end of the teaching and learning activities with the aim that students feel comfortable with learning that is in accordance with the talents and interests of students and of course in accordance with the current curriculum, namely the independent curriculum.

The current curriculum explains that science and social studies learning are integrated into science subjects. Fauzi et al., (2023) stated that Natural Sciences (IPA) is a subject taught in elementary schools that aims to provide students with organized knowledge, concepts, and ideas about the natural world. Based on Permendikbud No. 58 of 2014, it explains that science learning aims for students to have several competencies including demonstrating scientific behavior, developing thinking skills, solving problems, and being able to master science concepts and principles. Scientific attitudes affect science knowledge competencies, the higher the scientific attitude a student has, the higher the science knowledge competency the student has. The importance of fostering a scientific attitude in students as one of the goals of science subjects cannot be separated from the characteristics of science itself. Instilling a scientific attitude through the right learning method will greatly influence the development of a positive attitude towards the concept or topic being studied.

Science is a combination of systematically arranged knowledge that discusses all matters of signs of natural phenomena based on what will be experiments, thoughts and observations made by a group of humans. In fact, this science learning has a very important purpose for the development of students' intelligence from basic to advanced levels. Science means an important subject to be mastered by students in the era of technological and information advancement today, therefore, the dominance of science subjects is something that students cannot avoid in the learning process. Innovations that can be used by teachers in improving science learning outcomes are implementing learning models. Based on the results of observations and interviews conducted with class V teachers in Cluster I, Gianyar District, that teachers have not used innovative learning models and learning is still relatively focused on teachers. The learning provided by previous teachers was only from metaphors which made students less able to understand the material given by the teacher. The lack of student creativity in solving their problems is still low in the learning process, most students tend not to be able to solve the problems faced. This is due to the habit of students learning who only listen to explanations from teachers without practicing directly.

The learning model that can be used to improve student knowledge is the Project-based learning model. Ainurridho et al. (2021) stated that Project-based learning is a project-based learning model in which students are involved in learning activities using projects or activities as media. In the Project-based learning learning model, students learn through situations and settings on real or contextual problems. Ma'rufah et al. (2024) stated that Project-based learning presents high-level thinking activities. Therefore, everything is carried out in the following ways: group work dynamics, independent investigation, achieving a high level of understanding, developing individual

and social skills. Yani & Taufina, 2020) expressed the advantages of the Project-based learning model as follows: (1) making students motivated to learn in making projects; (2) making students more creative and innovative in learning and able to solve problems; (3) increasing collaboration, namely students need cooperation in groups and are able to create a fun atmosphere; (4) and create scientific attitudes such as being careful, honest, responsible, and creative. Based on the advantages of the Project-based learning model, it can make students more creative in learning, so this model will be able to increase student creativity in learning. In improving student learning outcomes, teachers need to pay attention to factors that can influence student learning outcomes, one of which is students' scientific attitudes.

Attitudes develop from interactions between individuals and their past and present environments. Utomo et al. (2020) stated that scientific attitude is the ability to react consistently, rationally, and objectively in a certain way in every problem. In line with this opinion, Agustina et al., (2022) stated that scientific attitude is a thinking disposition that is a research trend that is integrated into high-level thinking skills such as critical thinking, creativity, metacognition, problem solving and decision making, and greatly determines the quality of individual students. Based on these two opinions, it can be said that scientific attitudes can be used by students to determine how good their attitudes are in carrying out science process skills in science learning, especially in the application of the Project-based learning (PjBL) model. Science which includes an attitude of curiosity, respect for facts, critical thinking, discovery and creativity, open-mindedness and cooperation, perseverance, and a sensitive attitude to the surrounding environment. Curiosity encourages the discovery of something new with critical thinking will strengthen the position and dare to have different opinions.

Based on the description of the background and problems found, a study was designed to determine how much influence the Project-based learning model has on Science Learning Outcomes in terms of students' scientific attitudes. This is supported by the findings of (Taupik & Fitria, 2021; Dole, et al. 2017) who studied the PJBL learning model which had a positive influence on students' scientific attitudes in Integrated Thematic learning in Grade V of Elementary School. The same thing was found that PJBL was able to influence students' motivation and scientific attitudes (Ainurridho et al., 2021). Then, PJBL has also been shown to influence learning outcomes. So one of the models that trains students for this is Project-based learning (PjBL) which provides students with experience in organizing projects, allocating time, and managing resources such as equipment and materials to complete assignments (Nurhadiyati et al., 2020) Therefore, a study was conducted entitled "The Influence of the Project-based learning Model on Science Learning Outcomes in Terms of Students' Scientific Attitudes.

Based on the background above, the following problems can be identified. The background of the problem in this study is the low learning outcomes of students. The average learning outcomes of students are still below the learning objectives and criteria for achieving learning objectives set in the subject of science in grade V. The low learning outcomes are caused by several things. First, students are less enthusiastic in following the learning process, Students' creativity in solving their problems is still low, Most students tend not to be able to solve the problems faced, this is due to students' learning habits of only listening to explanations from teachers without practicing directly, Most students tend not to be able to solve the problems faced, this is due to students' learning habits of only listening to explanations from teachers without practicing directly, lack of

basic skills such as reading, writing, or mathematics can be an obstacle to achieving learning outcomes, teacher competence and ability in teaching are very influential. Lack of skills in managing the class or delivering material can affect learning outcomes. Then, lack of constructive feedback or inadequate assessment can hinder student development.

The problems identified during observation and interviews are very diverse and complex so that they will result in a broad discussion in this study. In this study, the limitations of the problems to be reviewed are about the low scientific attitude of fifth grade students in science learning and the lack of use of technology-oriented learning models. One of the factors of this problem is the lack of teacher innovation in using integrated learning models according to current developments. So, the limitation in this study is to provide solutions to improve the learning outcomes of fifth grade elementary school students through science learning.

Based on the findings of the problem, the objectives of this study are; 1) To analyze and describe the effect of differences in science learning outcomes between students who are taught using the Project-based learning Model and conventional learning models in grade V Elementary School students; 2) To analyze and describe the effect of the interaction between the Project-based learning model and scientific attitudes on science learning outcomes in grade V Elementary School students, 3) To analyze and describe the differences in science learning outcomes between students who are taught using the Project-based learning model and students who are taught using the conventional model in students who have high scientific attitudes in grade V Elementary Schools; 4) To analyze and describe the differences in science learning outcomes between students who are taught using the Project-based learning model and students who are taught using the conventional model in students who have low scientific attitudes in class V of Elementary School Cluster I, Gianyar District, Gianyar Regency in the 2024/2025 Academic Year.

METHOD

In this study, a posttest only control group design was used. The first group was given treatment (X) and the other group was not. In this study, the population of the research subjects were all fifth grade elementary school students in Cluster I, Gianyar District, Gianyar Regency, totaling 281 people as shown in Table 1.

Table 1. Population Data for Elementary School Cluster I, Gianyar District

No.	School Name	Class	Amount
1.	SDN 1 Gianyar	V	31
2.	SDN 2 Gianyar	V	35
3.	SDN 3 Gianyar	V	17
4.	SDN 4 Gianyar	V	40
5.	SDN 5 Gianyar	V	38
6.	SDN 6 Gianyar	VA	43
		VB	40
8.	SDN 7 Gianyar	V	37
Amount			281students

(Source: Principal of Elementary School Gugus 1, Gianyar District)

The sampling technique used in this study was Random Sampling so that each class had an equal opportunity to become a research sample (Arikunto, 2018). Before

conducting random sampling, an equivalence test was carried out through ANOVA analysis, the Fcount value was obtained at 1.867 while the Ftable value at dfantar = 7 and dfdal = 273 was 2.043. In the description of the data, it can be seen that the Fcount value <Ftable (1.867 <2.043), so that H0 can be accepted and H1 is rejected, therefore, the sample class can be declared equivalent. If the equivalent class from several classes is known through the equivalence test, two classes are taken randomly by drawing lots. The selected samples were class VA SDN 6 Gianyar as the experimental class and class V SDN 4 Gianyar as the control class. The research data generated from this study are quantitative data. The data collection methods used in this study were observation, questionnaires, and tests.

Descriptive statistical tests of data were conducted using SPSS-26.00 for windows. The qualification of describing students' science learning outcomes data also used univariant analysis. This analysis is based on the ideal mean score (Mi) and ideal standard deviation (SDi). The criteria for qualifying science learning outcomes are classified into five as in Table 2.

Table 2 Guidelines for Conversion of Science Learning Outcome Qualifications

No	Criteria	Qualification
1	Mi + 1,5 SDi $\leq \bar{X} \leq$ Mi + 3,0 SDi	Very high
2	Mi + 0,5 SDi $\leq \bar{X <$ Mi + 1,5 SDi	High
3	Mi - 0,5 SDi $\leq \bar{X <$ Mi + 0,5 SDi	Medium
4	Mi - 1,5 SDi $\leq \bar{X <$ Mi - 0,5 SDi	Low
5	Mi - 3,0 SDi $\leq \bar{X <$ Mi -1,5 SDi	Very low

(Dantes, 2021)

Information:
Mi : ideal average = 1/2 (ideal maximum score + ideal minimum score)
Sdi : ideal standard deviation = 1/6 (ideal maximum score – ideal maximum score)

Normality testing is performed to ensure that the sample comes from a normally distributed population, so that hypothesis testing can be performed. Data normality testing is performed using SPSS-26.00 for windows Kolmogorov-Smirnov statistical test at a significance level of 5%. This test is performed on post-test data in the experimental group and control group. The homogeneity test is intended to show that two or more groups of sample data come from populations that have the same variance. Homogeneity testing uses SPSS-26.00 for windows through the Levene's Test of Equality of Error Variances with the criteria $\alpha > 0.05$.

The research time was carried out starting from the beginning of November to the end of November in 2024, by providing 6 treatments in the experimental class and 1 post-test in the experimental and control classes. The research procedures include: (1) the experimental preparation stage, (2) the experimental implementation stage, and (3) the final stage of the experiment. In this study, a non-test instrument was used to measure the high and low levels of students' scientific attitudes and a test instrument to measure students' science learning outcomes. The outline of the Student Scientific Attitude Questionnaire instrument is available in Table 3 and the outline of the student learning outcome

Table 3. Scientific Attitude Questionnaire Instrument Grid

No	Dimensions	Indicator	Item Number		Amount
			Positif	Negatif	
1	Curiosity	Desire to ask questions and discuss	1, 3	2	6
		Demonstrate enthusiasm in the scientific process	4	5, 6	
2	Honest and objective	No cheating	7, 8	-	6
		The findings are in accordance with the facts	9	10	
		Draw conclusions or interpretations according to facts/data	12	11	
3	Open	Appreciate the findings/finding process	14	13	5
		Accepting other people's opinions or findings	16	15, 17	
4	Persistent	Show a serious attitude	19	18, 20	5
		Carrying out activities without influence	21	22	
5	Critical	Showing a skeptical attitude	23, 24	25	5
		Analyzing questions/statements	26	27	
6	Environmental care	Maintain cleanliness of activity areas	29	28	3
		Applying the positive impact of findings to the environment	30	-	
Amount					30

Adapted from Dimyati and Mudjiono (in Mardika, 2020)

Table 4. Grid for the Science Learning Outcome Test

Learning Outcomes	Subject matter	Learning objectives	Question Indicator	No	Question Form
Students are able to understand the concept of magnetic and electric forces, and are able to understand the role of technology in life.	Magnets, Electricity, and Technology for life	Utilizing magnetic force to carry out daily activities	Students determine the properties of magnets (C3)	2, 5, 8	Multiple choice
			Students prove the properties of magnets (C5)	7, 21	Multiple choice
			Students determine how to make magnets (C3)	4, 24	Multiple choice

	Students determine the use of magnets in life (C3)	3, 22	Multiple choice
	Students analyze the properties of magnetism (C4)	1, 6, 23	Multiple choice
Describes how electrical energy is obtained and used	Students determine the use of electrical energy (C3)	9, 11, 14, 17	Multiple choice
	Students determine changes in electrical energy (C3)	10, 12, 13, 29	Multiple choice
	Students analyze electrical circuits (C4)	15, 18, 19, 20, 27, 28	Multiple choice
	Students conclude changes in electrical energy (C5)	25, 26	Multiple choice
Using technological devices that utilize changes in electrical energy	Students determine the benefits of technology (C3)	16, 30, 31	Multiple choice
	Students determine the use of technology in the areas presented(C3)	32, 33, 34, 35	Multiple choice
Amount		35	

FINDINGS AND DISCUSSION

Findings

The findings of the data description in this study are presented in Table 5.

Table 5. Recapitulation of Description of Science Learning Outcome Data

Group	Y1X1	Y1X2	Y2X1	Y2X2
Sample (N)	13	13	12	12
Mean	28,69	26,62	19,92	12,83
Median	28	26	19,5	12,5
Modus	28	27	19	11
Standard Deviation	4,23	4,98	2,97	2,48
Range	13	15	9	7
Minimum	21	19	15	10
Maximum	34	34	24	17
Sum	373	346	239	154

Information

YA1B1 = Description of data on students' science learning outcomes following the PjBL learning model with high scientific attitudes

YA2B1 = Description of data on students' science learning outcomes following the PjBL learning model with low scientific attitudes

YA2B1 = Description of data on the results of students' science learning who follow the conventional learning model with a high scientific attitude

YA2B2 = Description of data on the results of students' science learning who follow the conventional learning model with a low scientific attitude

The data of the students' science learning outcomes score who followed the PjBL learning model with a high scientific attitude showed a minimum score of 21, a maximum score of 34, a range of 13, an average of 28.69, and a standard deviation of 4.23. The average data of the students' learning outcomes following the Project-based learning model with a high scientific attitude was 28.69 in the interval of $28.58 \leq M < 30.74$, included in the "High" category. The data of the students' science learning outcomes following the Project-based learning model with a low scientific attitude showed a minimum score of 19, a maximum score of 34, a range of 15, an average of 26.62, and a standard deviation of 4.98. The average gains score of the students' learning outcomes following the Project-based learning model with a low scientific attitude was 26.62 in the interval of $25.25 \leq M < 27.75$, included in the "Medium" category. The data of the students' science learning outcomes score who followed the conventional learning model with high scientific attitude showed a minimum score of 15, a maximum score of 24, a range of 9, an average of 19.92, and a standard deviation of 2.97. The average score of the students' science learning outcomes who followed the conventional learning model with high Scientific Attitude was 19.92 in the interval of $18.75 \leq M < 20.25$, included in the "Moderate" category. The data of the students' science learning outcomes score who followed the conventional learning model with low scientific attitude showed a minimum score of 10, a maximum score of 17, a range of 7, an average of 12.83, and a standard deviation of 2.48. The average score of the students' science learning outcomes score

who followed the conventional learning model with low Scientific Attitude was 12.83 in the interval of $11.76 \leq M < 12.92$, included in the "Low" category.

The results of the first prerequisite test, namely the normality test of data distribution, obtained Kolmogorov-Smirnova and Shapiro Wilk significance values of 0.200 and 0.250 for the experimental class and Kolmogorov-Smirnova and Shapiro Wilk significance values of 0.200 and 0.144 for the control class. Obtaining these values indicates that the sig. value > 0.05, therefore, it can be concluded that the data is normally distributed. Furthermore, the results of the second prerequisite test, namely the homogeneity test using the SPSS-26.00 for Windows program through the Levene's Test of Equality of Error Variances for the homogeneity test, obtained a result of 0.116. Obtaining these values indicates that the sig. value > 0.05, therefore, it can be concluded that the data comes from homogeneous data and can be continued to the hypothesis test. The results of hypothesis tests 1 and 2 using ANOVA AB analysis are available in Table 6.

Table 6. Summary of Results of ANOVA AB Test Analysis

Tests of Between-Subjects Effects

Dependent Variable: Hasil Belajar IPAS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1916.691[a]	3	638.897	43.448	.000
Intercept	24192.970	1	24192.970	1645.222	.000
A	1587.610	1	1587.610	107.964	.000
B	261.800	1	261.800	17.803	.000
A * B	78.200	1	78.200	5.318	.026
Error	676.429	46	14.705		
Total	27324.000	50			
Corrected Total	2593.120	49			

a. R Squared = .739 (Adjusted R Squared = .722)

Information
A = Learning model
B = Self Regulated Learning

Based on the results of the ANOVA AB analysis in Table 8, it shows that the significance value of the tests of between-subjects effects is less than 0.05 (sig. < 0.05), the F coefficient between models (FA) is 107,964 with a significance level of 0.000 and the F coefficient of interaction between models and scientific attitudes (FAB) is 5,318 with a significance level of 0.026.

To test hypotheses 3 and 4, the t-Scheffe test analysis is used with the condition that if the hypothesis test 2 obtains a significance number below 0.05, then it can be continued with the t-Scheffe test. Conversely, if the significance number is greater than 0.05, it means that it cannot be continued with the t-Scheffe test. The results of the analysis test on hypothesis 2 obtained a significance number below 0.05, then the analysis was continued with the t-Scheffe test. The test of these hypotheses is presented as a test of the null hypothesis (H0) and the alternative hypothesis (H1). The calculation was carried out using the help of the SPSS-26.00 for windows program. The results obtained are available in Table 7.

Table 7. Summary of T-Scheffe Advanced Test Results

Dependent Variable: Hasil Belajar IPAS
Scheffe

(I) Post Hoc	(J) Post Hoc	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A1B1	A1B2	2.08	1.504	.596	-2.29	6.44
	A2B1	8.78*	1.535	.000	4.32	13.23
	A2B2	15.86*	1.535	.000	11.40	20.31
A1B2	A1B1	-2.08	1.504	.596	-6.44	2.29
	A2B1	6.70*	1.535	.001	2.24	11.15
	A2B2	13.78*	1.535	.000	9.33	18.24
A2B1	A1B1	-8.78*	1.535	.000	-13.23	-4.32
	A1B2	-6.70*	1.535	.001	-11.15	-2.24
	A2B2	7.08*	1.566	.001	2.54	11.63
A2B2	A1B1	-15.86*	1.535	.000	-20.31	-11.40
	A1B2	-13.78*	1.535	.000	-18.24	-9.33
	A2B1	-7.08*	1.566	.001	-11.63	-2.54

Based on the results of the T-Scheffe Advanced Test analysis in Table 9, the results of the science learning per group of students who have a high scientific attitude who are taught using the Project-based learning model and the conventional learning model obtained a significance figure below 0.05, which is 0.000 and the results of the science learning per group of students who have a low scientific attitude who are taught using the Project-based learning model and the conventional learning model obtained a significance figure below 0.05, which is 0.000.

Discussion

Students who are taught with the Project-based learning model in this model, students will work in groups to plan, develop, and complete projects that can connect the concepts they learn with real-world problems. The main advantage of Project-based learning is connecting learning with real-world contexts. Students can see how the concepts they learn in class are applied in everyday life or in certain professions. So that students who are taught with the Project-based learning model have superior learning outcomes when compared to students who are taught with conventional learning. in conventional learning students look more passive. It can be seen in the learning process that students only listen to the teacher's explanation without any active reciprocal interaction. This indicates that the learning process carried out is not meaningful so that it has an impact on low student learning outcomes in the group of students who are taught with the conventional model. The results of research from Taupik and Fitria (2021) are that there is a significant influence of the Project-based learning model on the achievement of science learning outcomes.

The Project-based learning model and scientific attitude provide an interactive influence on the results of learning science in grade V elementary school students in Cluster I, Gianyar District. This interactive influence refers to how the two factors influence and strengthen each other to improve the quality of student learning. In Project-based learning, students work in groups or individually to plan, research, and produce products or solutions based on real problems. A strong scientific attitude will support

students in completing more complex and in-depth projects. Scientific attitudes include the ability to think objectively, use scientific methods, and prioritize evidence in decision making. The interactive influence between the Project-based learning model and scientific attitudes can produce more holistic learning (Farida, et al. 2018). Project-based learning provides a platform that allows students to develop scientific skills in a more real and practical context, while a good scientific attitude allows them to be more effective in facing the challenges in the project (Alawiyah & Sopandi, 2015). As a result, these two factors work together to create more meaningful and in-depth learning for students.

The scientific attitude developed in this model is more active, because students do not only receive information passively, but are also involved in the process of investigation and problem-based learning. This can increase curiosity and analytical thinking skills. Conventional learning is more teacher-centered, where the teacher is the main source of information. Students tend to be recipients of information and are less involved in a deeper scientific process. The Project-based learning model tends to produce better learning outcomes, especially in terms of practical skills and learning independence. Students who learn through Project-based learning are expected to be able to connect theory with practice, which in turn strengthens the understanding of scientific concepts. Student learning outcomes in terms of scientific attitudes also tend to be higher, because they practice working systematically, conducting experiments, and compiling reports in accordance with scientific methods. Students who are taught with the Project-based learning model are likely to have higher scientific attitudes than students who learn with the conventional model, because PjBL provides more opportunities for exploration, research, and development of practical skills. Project-based learning emphasizes more on student-centered learning, which allows them to learn through direct experience and develop critical thinking and collaboration skills, all of which support the improvement of scientific attitudes in science learning.

For students with low scientific attitudes, the Project-based learning model can still provide opportunities for students to improve their scientific attitudes because they are directly involved in activities that require them to use the scientific method, think logically, collect data, and make evidence-based decisions. Students with low scientific attitudes may not feel encouraged to think critically or conduct experiments in class. Lecture-based learning does not involve students in the problem-solving process directly, which causes scientific thinking skills to not develop well. Even though their scientific attitudes are low, Project-based learning tends to provide students with opportunities to improve and develop their scientific attitudes through practical experiences. Although they may start with weak scientific attitudes, the active and project-based approach in Project-based learning gives them the opportunity to see the benefits of critical thinking, collaboration, and problem solving.

Research results from Saregar & Sunarno (2013) From the results of the hypothesis test of the research data, it can be concluded that: 1) there is an influence of the use of experimental learning methods and demonstration discussions on cognitive and affective learning achievements; 2) there is an influence of scientific attitudes on cognitive and affective learning achievements; 3) there is an influence of verbal ability on cognitive and affective learning achievements; 4) there is an interaction between learning methods and scientific attitudes on cognitive achievement, while there is no interaction on affective learning achievements; 5) there is no interaction between learning methods and verbal abilities on cognitive achievement, while there is interaction on affective learning achievements; 6) there is no interaction between scientific attitudes and

verbal abilities on cognitive and affective achievements; 7) there is no interaction between learning methods and scientific attitudes and verbal abilities on cognitive and affective achievements.

The strength of this study is the emergence of positive student responses in implementing project-based learning, so that there is an interaction between the learning model and students' scientific attitudes. The weakness of this study is that it only shows the interaction of the learning model with students' scientific attitudes towards learning outcomes from the cognitive side only, so that supporting suggestions are needed for the progress of further research.

CONCLUSION

Based on the analysis and discussion of the results of the hypothesis test that has been carried out, the following conclusions are obtained from the results of the study. There is a difference in the results of learning science between students who are taught with the Project-based learning Model and the conventional learning model in Elementary School Students of Class V Cluster I, Gianyar District, Gianyar Regency. There is an interactive influence between the Project-based learning learning model and scientific attitudes on the results of learning science in elementary school students of class V Cluster I, Gianyar District. There is a difference in the results of learning science between students who are taught with the Project-based learning learning model and students who are taught with the conventional model in elementary school students of class V Cluster I, Gianyar District who have high scientific attitudes. There is a difference in the results of learning science between students who are taught with the Project-based learning learning model and students who are taught with the conventional model in elementary school students of class V Cluster I, Gianyar District who have low scientific attitudes.

Based on the findings obtained in this study, the following suggestions can be submitted. First, suggestions for class teachers is teachers are advised to use the Project-based learning model to improve students' science learning outcomes by reviewing students' scientific attitudes so as to encourage student activity in order to optimize their learning outcomes. Teachers are expected to provide assessment instruments in the form of multiple-choice questions to measure students' science learning outcomes and assess students' learning processes using questionnaires according to the dimensions and indicators to assess students' scientific attitudes and learning outcomes, so that teachers know the extent of the success of learning with the Project-based learning model. Second, suggestions for school principals is, school principals are advised to use the results of this study as a reference for teachers in other schools as an innovative learning model for effective and efficient learning and to improve the quality of education. Third, suggestions for other researchers, other researchers are advised to use the results of this study as a reference and source of information in conducting further research, especially on the Project-based learning model to improve students' science learning outcomes by reviewing students' scientific attitudes in general to obtain better results in the future.

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