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Research Article

The Effect of the Project Based Learning Model Assisted by Media Explosion Box on the Learning Outcomes of Class V Students of SDN Pinggir Papas 1

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ABSTRACT

This research aims to find out whether there is an influence of the project based learning model assisted by explosion box media on the science learning outcomes of elementary school students. This research uses a type of quantitative research with a pre-experimental method with a one group pretest posttest design research design. Data collection techniques used tests. The population in this study was all 23 students in class V of SDN Pinggir Papas 1, Kalianget District. The instruments used are multiple choice tests. The average score from the pretest was 44.35, while the posttest score was an average of 80.78. The results of the research for hypothesis testing using the paired samples test statistical test, obtained I a significance value of <0.05, namely 0.000, then Ho was rejected and Ha was accepted. Therefore, it can be concluded that these results show that there is an influence of the project based learning model assisted by explosion box media on students' science learning outcomes.

Keywords: Project Based Learning; Explosion Box; Learning Outcomes; Science; Students

1. INTRODUCTION

Learning is a process that aims to achieve understanding and change in students. The learning process makes an activity that is planned systematically with the aim of achieving maximum results, so that it is able to deliver to the desired learning goals (Bahri, S., & Wahdian 2021). Learning not only focuses on the absorption of knowledge and knowledge, but also on the formation of student behavior patterns that can support the achievement of effective learning goals. At The student learning process is not just about imitating and observing, but students must also be able to choose, each lesson, and actively participate. However, the learning process is very important because in the learning process, teachers as educators teach various types of learning, One of them is science science learning. Social Science (Natural and Social Sciences) learning is a subject whose goal is to build science literacy. In addition, IPAS learning is also one of the subjects that must be taught in elementary school. Learning with the concept of IPAS strives to improve the ability and Adds to the experience alone about concepts, facts, and the process of discovery have a scientific attitude (Azis, 2024:9).

IPAS learning focuses on providing hands-on experience that equips participants with the skills to understand the natural environment scientifically. IPAS aims to deepen students' understanding of the surrounding natural environment. One of the materials studied in learning science science is natural resources (SDA). Natural resources are everything that comes from nature and can be used for human life needs. For learning objectives (TP), namely analyzing the types of natural resources appropriately, while the flow of learning objectives (ATP) is that students are able to analyze and identify the types of natural resources appropriately.

Based on the results of observations on November 13, 2024 at SDN Girpapas 1 with the Principal and grade V teacher of SDN Pinggir papas 1, namely Mr. Triyono, S.Pd., it has been conveyed that the learning outcomes in student science learning are still low. Some students of SDN Girpapas 1 have not met the Minimum Completeness Criteria (KKM) with an average of 70%. For the number of students in grade V of SDN Pinggir papas 1, there are 23 students, while those who reach the target are 15 students and those who do not reach the target are 7 students. Science and technology learning still tends to be monotonous, the use of learning models is less varied, it is rare for teachers to use learning media to make it easier for students to understand the material they convey, because the presence of media in the learning process will greatly help both teachers and students in achieving learning goals. During the learning process, students tend to be

passive in participating in learning activities. However, there are also students who are not enthusiastic about learning and feel bored, and students are less able to understand the material delivered by the teacher. This makes students less familiar with the material being taught, which has an impact on low student learning outcomes.

The importance of learning outcomes is very important as an indicator of success for a teacher and student. Learning outcomes are the level of mastery achieved by students in participating in teaching and learning programs, in accordance with the set goals. The learning outcome of a subject is a change in individual behavior that includes changes in cognitive, affective, and psychomotor realm abilities. Behavior change is obtained after students complete the learning program through relationships using learning resources and the learning environment (Yeni, D. F., Putri, S. L., & Setiawati 2022). The learning outcomes in science and science learning emphasize more on the cognitive realm, because it makes the student's mindset more complex, so the student learning outcomes in science and science learning use the project-based learning learning model. A learning model is a method, technique, or plan used to design learning conditions in the classroom (Taupik, R. P., & Fitria 2021:1531). Where in the selection of a learning model that is in accordance with the characteristics of students will support the achievement of learning outcomes to the maximum. This learning model is used to describe the learning process from the beginning to the end of learning. Many students feel bored when they are studying science at school. This saturation makes students unenthusiastic in receiving lessons at school, so there needs to be an effort to achieve success in learning science science which involves the active role of students so that students are able to understand science learning quickly as the need for a proper learning model, where the learning model can be interpreted as planning that contains a series of activities designed to achieve educational goals.

The Project Based Learning model is student-centered learning that is used to develop active learning and involve students in investigating real-world problems in a collaborative environment (Azizah 2022:550). Where in project learning, students work in groups to make another project. In addition, this model can also improve children's cognitive abilities, group collaboration skills, teamwork, and children's creativity. So the learning process is integrated with the real world, student-centered and of course can support the improvement of student learning outcomes. By using this project-based model, students can be more active and creative and increase their courage, ability to work together in solving problems related to the material being studied so as to produce products produced by students themselves. In addition to using the learning model, it also uses a real media to learn learning materials.

The media is a A tool or means used to convey messages or information from the source of the message to students. This medium not only serves as a link between information and students, but also plays an important role in stimulating students' attention, thinking, and enthusiasm to develop their understanding and skills. In addition, learning media can also encourage the creation of a learning process to add new knowledge so that the learning objectives can be achieved properly (Zainuddin 2023). Learning media is one of the factors for the success of the learning process. Therefore, learning media is used as a means of attracting the learning atmosphere so that it does not cause boredom and boredom to students. The use of media is very influential in generating desire and motivating learning activities. More interesting, active and efficient learning media will make the learning process more active.

In line with previous research, there is information that there is an increase in motivation to learn mathematics by applying the problem based learning (PBL) model in grade 4 students of SD Negeri Kutowinangun 11 (Tomas and Prasetyo 2020). In addition, research conducted by (Maghfiroh 2014) proves that by applying the Contextual Teaching and Learning learning model, it can improve the learning outcomes of grade V students of SDN Kebonaonom Gedangan. Other research conducted by (Widayanti, E. R., & Slameto 2016) that by using the learning motto of Teams Games Tournament assisted by dice games can be used as a way to generate interest in learning that affects student learning outcomes in science lessons. This researcher has a difference in the independent variable *(x)* Where the focus of this research is increasing on the use of project-based learning models and media explosion boxes. This article is through an update in the use of a project-based learning model combined with an explosion box media, which is still rarely discussed in the educational literature. This combination offers a new approach that can improve learning effectiveness and provide a more engaging experience for students.

Media explosion is a box-shaped media, when the box is opened, then the four sides of the box are decorated with text and images. This box can contain various information, pictures, or materials related to the concepts taught in science and science learning. Media explosion boxes have advantages and increase learning outcomes and fun during the learning process. Thus learning will be more interesting and not boring. Not only that, the media explosion box also improves student understanding during the learning process and students can easily understand and memorize the learning material. If the media is opened, it will look beautiful and attractive, especially when decorated with written images, it will be very beautiful and interesting. This explosion box has the ability to make the impression that you want to convey in a material so that it makes the science and technology material easier and easier to understand during the learning process.

Based on the description above, the researcher is interested in conducting a study entitled "The Effect of the Project Based Learning Model Assisted by Media Explosion Box on the Learning Outcomes of Social Science Students in Grade V of SDN Pinggir papas 1".

2. RESEARCH METHOD

This study uses a type of quantitative research with a pre-experimental model, a type of one group pretest posstest design (Suggested 2017). The design of this study is that the pretest is given at the beginning before the treatment while the posttest after the treatment is given a test. Sampling using the purposive sampling technique, the sample in this study is class V of SDN Pinggir papas 1 which is taken by purposive sampling. This study aims to determine whether there is an influence of the project-based learning model assisted by explosion box media on the learning outcomes of social studies students in grade V. Population in the study of all grade V students of SDN Pinggir papas 1. Data collection techniques are in the form of test instruments in the form of pre-test and post-test. Test instruments are used to determine the learning outcomes in science and science learning for grade V students. The pretest and posttest questions are made the same because to see if there is a difference in the acquisition of scores before and after being given treatment.

The data analysis technique used to test the hypothesis with t-test analysis to determine whether there is an average difference between before and after treatment in the same group of samples. If there is a difference in the average before and after treatment, it means that there is an influence of the project-based learning model assisted by explosion box media on student learning outcomes. So before conducting a hypothesis test, it is necessary to conduct a normality test and a homogeneity test on student learning outcomes. In this study, there are 3 stages of procedures that need to be carried out. (1) Preparation stage, this stage the researcher prepares learning tools, research instruments in the form of question grids, (2) implementation stage, this stage conducts classroom learning by providing special treatment using explosion box media to grade V students of SDN Pinggir papas 1, (3) the final stage, at this stage the researcher conducts data analysis. Data analysis is one of the most important and requires data collection to draw conclusions from the research (Handayani, 2023).

3. RESULTS AND DISCUSSION

3.1 Results

The data analysis used in this study is a quantitative descriptive analysis. Several statistical tests with the help of the SPSS 16.0 for windows application can provide accurate results from research on the influence of the project-based learning model assisted by media explosion box on learning outcomes in social science learning. Instrumental tests are used to measure students' social science learning outcomes in the form of tests. Before the research is carried out, a trial is carried out and the data of the test results are tested for validity and reliability to determine the validity or appropriateness of the test to be used in the research, which are as follows:

1. Validity Test

Based on the results of the test test conducted on 14 respondents from class V of SDN Gunggung 1, with a total of 18 questions, it can be concluded that the questions tested were declared valid. This shows that the instruments used in the study have met the validity criteria for use in a wider range of measurements. The table used with the number of respondents 14 is 0.4973.

2. Reliability Test

The reliability test was carried out to determine whether the instrument was feasible or not as a measuring tool in research. The reliability test of the instrument in this study uses Cronbach's Alpha which is said to be realistic if the alpha coefficient >0.6, if the value of Alpha <0.6 then it is not said to be realistic (Ghozali 2011:42).

Table 1. Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.631	18

Based on the results of the reliability test using SPSS, it was obtained from a result of 0.631, in the reliability test it was more than 0.6. Therefore, research instruments can be said to be realistic and feasible to use.

3. Normality Test

The normality test was carried out to find out whether the research data was normally distributed or not. The normality test used was *Shapiro-Wilk* with a significant level of 5%.

Table 2. Normality Test

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Mr.	Statistic	Df	Mr.
Pretest	.089	23	.200*	.972	23	.739
Posttest	.143	23	.200*	.951	23	.305

Based on the results of the Shapiro-Wilk normality test above, the researcher can use the help of SPSS 16.0 for windows to obtain a significant value of > 0.05 from each category so that it can be concluded that the test instrument is normally distributed. And can be continued in the homogeneity test. The researcher used Shapiro-Wilk because the number of samples was less than 30.

4. Homegenity Test

The homogeneity test was carried out by the researcher to compare the ability of students as an experimental group before and after being given treatment. The homogeneity test was carried out to find out whether the data was homogeneous.

Table 4. Homogeneity Test

Test of Homogeneity of Variances			
Variable			
Levene Statistic	df1	df2	Mr.
2.350	1	44	.132

Based on the results of the homogeneity test conducted by the researcher using the help of SPSS 16.0 for windows, a significance of 0.132 was obtained, which means that the data is suitable for use as a research instrument because it has a significant >0.05.

5. Hypothesis Test

After testing everything from the instruments that will be used by the researcher, a t-test will be carried out on the learning outcomes of students using the SPSS 16.0 for windows application, the values tested can be seen from the table below.

Table 5. Hypothesis 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 - Posttest	-36.435	12.391	2.584	-41.793	-31.077	-14.102	22	.000

Based on decision-making, if the significance value > 0.05 then H0 is accepted, but vice versa if the significance <0.05 then H0 is rejected. Based on the t-test table above, a significance value of < 0.05 was obtained, which is 0.000, then H0 was rejected. These results show that there is an influence of the project-based learning model assisted by the media of the box on the learning outcomes of students' science and science.

Table 6. The average value of pretest and posttest

		Pre_test	Post_test
N	Valid	23	23
	Missing	0	0
Mean		44.35	80.78
Median		44.00	78.00
Std. Deviation		11.938	8.985
Variance		142.510	80.723
Minimum		24	65
Maximum		67	100

3.2 Discussions

Based on the results of the validity test to use SPSS 16.0 for window to calculate the validity test, a significance level of 0.05 was used with the number of respondents as many as 14 students, so that r table = 0.4973 was obtained. The test instrument is said to be valid and suitable to be used to take data in the implementation of research if r calculates > r table. The normality test is used to find out whether the distribution of data is normal or not with data in the form of pretest and posttest results. The normality test can be calculated with the help of SPSS 16.0 for windows, a significant value of 0.305 was obtained with a category of > 0.05 so that it can be concluded that the instrument is normally distributed. The researcher used the Shapiro-Wilk test because the number of samples was less than 30 with the provision of a significant level of a = 0.05. If the result of the calculation is significant> 0.05 then the data is declared normally distributed or Ho is rejected, if the significant calculation is <0.05 then the data is said to be abnormally distributed or Ho is accepted or in other words the data is abnormally distributed.

After the normality test was carried out and it was known that the data was normally distributed, then it was continued by testing homogeneity. The homogeneity test was carried out to find out whether the variance of the two groups was the same or different. The homogeneity test using the help of SPSS 16.0 obtained a significance value of 0.132 which means that the data is suitable for use as an instrument because it has a significant value of >0.05. After testing everything from the instruments that will be used by the researcher, a t-test will be carried out on the learning outcomes of students using the SPSS 16.0 for windows application, for hypothesis testing it is necessary to be carried out by the researcher so that the conclusions drawn by the researcher are really accurate in accordance with the data obtained from the field. Hypothesis testing is carried out as decision-making based on data analysis. The hypothesis testing of students' social science learning outcomes in this study uses t-test analysis using the help of SPSS 16.0 on the Paired Sample t-Test option. This test was used to test whether there was an average difference between before and after treatment on the same group of samples. In the hypothesis test, a significance value of <0.05 was obtained, which is 0.000, then H0 was rejected. These results show that there is an influence of the project-based learning model assisted by the media of the box on the learning outcomes of students' science and science. The basis for making decisions on this test is by using the significance value. According to (Ghozali, 2016: 99), decision-making is carried out by looking at the value of significance. If the significance value is <0.05, then H_1 is accepted and Ho is rejected, which means that there is an average difference between before and after the treatment so that there is an effect.

Based on the data that has been presented above, it is obtained that after the implementation of the project based learning model assisted by explosion box media, it is better before the implementation of the project based learning model. This is evidenced by an increase in learning outcomes where the average score of the pretest is 44.35, while the average score of the posttest is 80.78. There was a significant difference in the learning outcomes of students before using the project based learning model assisted by media explosion box and after students learned using the project basel learning model assisted by media explosion box. This difference is due to the fact that the learning model and media allow students to understand more deeply related to the material being studied, so that the selection of a project-based learning model assisted by the right learning media is very useful in conveying learning materials to students, if the model and media are

carried out by the teacher, students will easily understand the learning material.

The use of learning models has a great influence on student success in learning. This project-based learning model makes students more enthusiastic in the teaching and learning process activities. The Project Based Learning model is a project that is carried out to deepen students' knowledge and skills obtained by providing students with a problem that can be solved with a project related to the material and competencies possessed by students and providing opportunities during student-centered learning, more collaborative, students are actively involved in completing projects independently (Mutawally 2021:6). In this project-based learning model, students are encouraged to be more active in activities. Through project activities, students are trained to solve project problems independently, providing opportunities for students to build their own knowledge by providing hands-on experience and presenting project ideas they are working on. Therefore, the knowledge gained by students becomes more meaningful when they participate directly in learning.

By using the right and diverse media such as media explosion boxes, it is able to overcome students' passive attitudes, make student learning more active, and make the learning atmosphere more lively. Media explosion box is a media in the form of a box when the lid of the box is opened, it will form a net of boxes, the four sides give rise to an attractive image, writing or decoration. The media explosion box helps students learn faster and easier to remember and aims to help students understand the material to make it more fun, as well as provide variety so that students do not get bored in learning (Puspitasari 2021:101). Therefore, teachers must be able to make good use of learning media, because it can be used as a reference for a teacher to carry out the teaching and learning process optimally with the use of learning media.

The use of the Project Based Learning model with the help of media explosion boxes is very effective to create a fun, active learning atmosphere, and make it easier for students to understand natural resource material in science and science learning. In learning IPAS, using the learning model, students become more active and confident in answering questions from teachers. Not only with this media, students get an interesting learning experience by presenting visual elements in the form of pictures. So that the learning process in the classroom, which was initially less enthusiastic and boring, became more interesting so that students were more enthusiastic and easily understood the science and technology learning material.

4. CONCLUSION

Based on the results of the study, it can be concluded that there is a significant influence of the project-based learning model assisted by explosion box media on the learning outcomes of science and science students in grade V of SDN Pinggir papas 1. This is evidenced by the paired sample test hypothesis test where the significance value <0.05 is 0.000, then H0 is rejected Ha is accepted. Then it was obtained with an average score of 44.35 from the pretest, while the posttest score was obtained with an average of 80.78. which proves that the use of the project based learning model assisted by media explosion box in learning science makes it better. Therefore, the effect of the project-based learning model assisted by explosion box media on student science learning outcomes.

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