

# The Influence of the Environmental Exploration Approach on Elementary School Students' Science and Science Learning Outcomes in the Independent Curriculum

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## Abstract

Natural and Social Sciences (IPAS) is an important subject and also a new breakthrough in the Independent Curriculum at elementary school level. Science and Technology is a science that studies the universe, including objects, living creatures, and the relationships between them, as well as the processes that occur in it. Science learning in elementary schools aims to provide students with the scientific knowledge, skills and attitudes needed to understand the universe and apply it in everyday life. One of the science and science learning approaches that is effective in improving student learning outcomes is the Exploring the Natural Environment (JAS) approach. The JAS approach is a student-centered and environment-based learning approach. In the JAS approach, students are invited to learn about the natural environment through exploration, investigation and problem solving activities. The aim of this research is to find out how to improve student learning outcomes by using the Environmental Exploration (JAS) approach in science and science learning at Nguter 03 Elementary School. This type of research is a quasi-experimental (*quasi experiment*) which aims to determine the influence of the Environmental Exploration Approach on learning outcomes in science learning students at Nguter 03 Elementary School. The results of this research show an increase in learning outcomes seen from the average value which increased from 50 to 70. Hypothesis testing using *independent sample t-test* also shows that there is a significant difference between the class average value and the sig value.  $0.000 < 0.05$ . In other words, the JAS learning approach can help students to develop critical thinking and problem solving skills. From the formulation of the results of this research, the researcher recommends that educators and/or policy makers obtain them implementing the JAS approach in elementary school science and science learning, in order to provide new learning experiences for students.

## Introduction

The world of education always leads to change following the times. The developing paradigm also addresses the things students need in learning. Scientific and social knowledge are knowledge that cannot be separated. Therefore, in the Independent Curriculum, the two subjects which were previously independent are now combined into one subject, namely Natural and Social Sciences (IPAS).

Based on the above, researchers conducted research related to the two subjects which have been merged into one. This thing becomes *concerns* researchers because teaching something new requires adequate competence. Alignment of learning activities with learning objectives is important when it comes to improving educational practices. By using an approach that suits the character of students and the environment, it is hoped that the quality of learning will improve.

A learning approach can be a bridge to achieving learning goals. A learning approach is a guideline that is still conceptual in nature or can be interpreted as a starting point or our point of view on the learning process. Judging from learning activities, learning approaches are divided into two, namely teacher-centered learning approaches (*teacher centered approach*) and a student-centered approach (*student centered approach*) (Lutfri et al., 2020).

Choosing the right learning approach when teaching can influence students' interest in learning. There is a need for improvement and development in science learning. Learning outside the classroom by utilizing nature, both nature consisting of non-living objects and living creatures, in the surrounding environment which is used as a learning resource will make students happy and active. Learning activities that researchers can use to create active and fun learning in accordance with the independent curriculum is by using the Exploring the Natural Environment (JAS) approach.

The Environmental Exploration Approach (JAS) is a way of teaching that utilizes the advantages of the natural, social and technological environment around students to help them understand the material and culture as science learning objects. where this natural phenomenon can be studied through scientific work. As a learning resource, the JAS approach provides students with the opportunity to learn from their environment.

Exploration, constructivism, science processes, learning communities, *bioedutainment*, and authentic assessment are six characteristics of the JAS approach. Students gain real-world experience as well as simulated scientific work through this exploration activity. Learning in science and science subjects outdoors or in the natural environment builds meaning or can involve more senses, namely the sense of sight, the sense of hearing, the sense of touch and the sense of smell which provides a more memorable experience. Therefore, the JAS approach provides an interesting and enjoyable learning atmosphere and students can directly observe what is being studied. Learning activities are linked to real world situations which can open up the thinking horizons of all students, so that their learning outcomes are more effective (UmmuKhairiyah, 2022)

Natural and Social Sciences (IPAS) is a science that studies living things and inanimate objects in the universe and their interactions, and examines human life as individuals as well as social creatures who interact with their environment (Kemdikbud, 2022). In studying this science, a person no longer compartmentalizes material as before. Because it is felt that nature and society always coexist wherever they are. Natural conditions will change based on the existing social situation, as well as social life will run well if the nature which is the habitat of residence is well maintained.

In order to improve the quality of learning, especially science subjects, it cannot be separated from the way teachers prepare everything related to the learning program that will take place (Wedyawati & Lisa, 2019). Learning innovation with.

Creative ideas aim to improve learning outcomes (Wahid et al., nd). Teachers must create a learning atmosphere that suits the characteristics of students and the character of the material, equipped with learning resources and media that support learning activities can run effectively and efficiently, so that the learning process leads students to carry out learning activities while the teacher acts as a facilitator and motivator so that students can be motivated in the learning process (Education & Office, 2017).

The background of this research is based on the problem of low science and science learning outcomes for Class IV students. This is in line with observations at Nguter 03 State Elementary School. The results of observations made by researchers in the science and science learning process can be seen that the learning atmosphere is still dominated by teachers, because in the learning process Teachers still act as information centers. Teachers provide too much learning material to students and then students are given questions to work on, so that the learning atmosphere in the classroom becomes boring. When students have passed their focus period and learning activities are monotonous, it is certain that conducive classroom conditions will not be maintained any longer. As a result, students will carry out their own activities outside of the ongoing learning activities. So, Here it can influence student learning outcomes. The learning atmosphere that takes place in the classroom does not utilize the various media around it.

From the problems described above, by using the Environmental Exploration approach in science subjects, researchers hope that the material taught will be easy to understand. The Exploring the Environment approach is an approach that emphasizes real world-based learning activities so that apart from generating critical thinking in every student's thinking, this approach allows students to learn various concepts connecting with the real world so as to maximize learning outcomes. Compared to previous research which did not use the environmental exploration approach (JAS), this research provides a new contribution for educators in motivating students to contextually have a significant influence on learning outcomes.

Based on the results of interviews with fourth grade elementary school teachers, it was found that student learning outcomes had not met the expected achievements. This can be seen from student learning results before carrying out learning activities using the JAS approach, with the average student score being 59.56. Among the many factors that cause learning outcomes that have not achieved the expected goals, one of them is the lack of interaction between students and teachers in science learning activities.

After looking at several problems, it can be concluded that student learning outcomes have not been achieved well. Student learning outcomes which are said to be low are influenced by learning approaches that are less varied, resulting in a boring, monotonous learning atmosphere and a lack of student interest in the learning material. The learning atmosphere that takes place in the classroom does not utilize the various media around it.

The solution is expected to be able to overcome these problems by activating the learning process, one of which is by using appropriate learning approaches by subject teachers (Khusniati, 2012). One learning approach that activates students is the approach of exploring the surrounding nature.

The steps for implementing the JAS approach include: (1) identifying learning objectives; (2) choose a topic that interests students; (3) prepare the necessary materials and tools; (3) plan learning activities; (4) carry out learning; and (5) learning evaluation.



Meanwhile, the advantages of implementing the JAS approach include: (1) learning becomes more interesting and meaningful for students; (2) students can learn more about the environment; and (3) students can develop the skills needed to face challenges (Ummu Khairiyah, 2022). The benefits of implementing the JAS approach include that students can learn actively and independently. Students can develop critical thinking and problem solving skills. Students can develop communication and collaboration skills. Students can increase their love and care for the environment. Schools or Madrasas that are located in rural areas are very suitable if in carrying out learning activities they apply the Exploring the Natural Environment approach.

**Methods**

The approach used in this research is a quantitative approach. Meanwhile, this type of research is research *quasi experiment (quasi experiment)* (Mukhid, 2021). This design has a control group, but it cannot function fully to control external variables that can influence the implementation of the experiment.

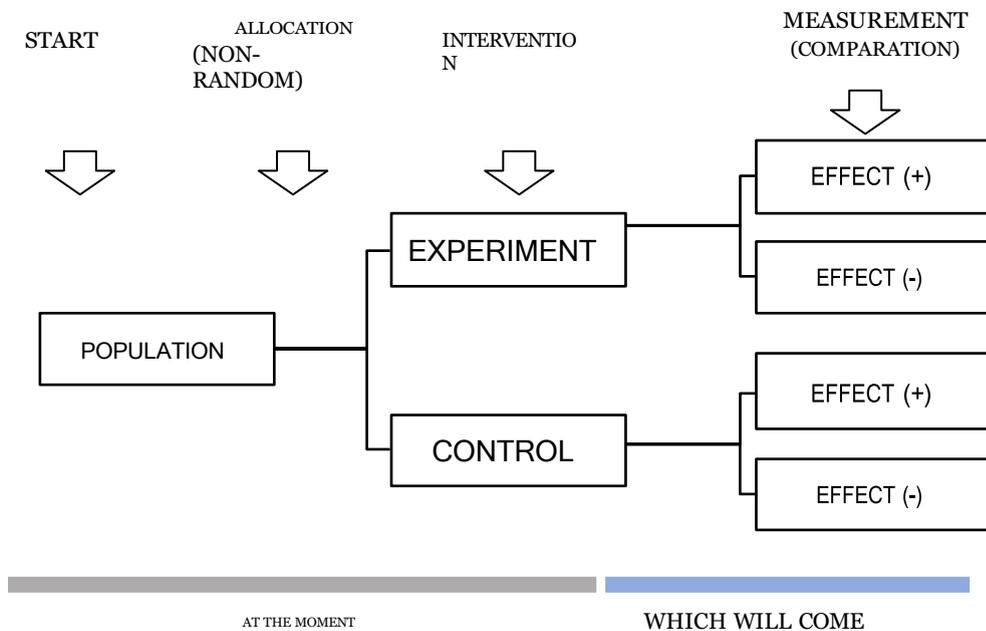


Figure 1. Design Quasi Experiment

The population in this study were all students in class IV of Nguter 03 State Elementary School. For class IVA there were 23 students and for class IVB there were 20 students. This class is used because it represents the population as a whole, and the sample is part of the population to be studied. A sample can be understood as a part of a population that has been selected for study and applied to the population as a whole. Samples are part of the subjects selected for investigation (Sumargo, 2020).

The sample used in this research is a random sample consisting of two classes including class IVA as the experimental class and class IVB as the control class (Sukardi, 2021). The number of students used as samples was 33 students. Sampling is carried out simply at random and can be used if the number of sample units in the population is not too large. Or by giving a different number to each member of the population, then selecting a sample using random numbers (Firmansyah et al., 2022).

The data collection instruments in this research are learning outcomes tests, observation and documentation (Djaali, 2020). The first instrument is a learning outcome test which is designed to measure the specific effects of a teaching program that students usually gain with their efforts. Learning outcome tests are used to measure students' understanding of the material that has been studied and taught (Khaerudin, 2015). There are two types of learning outcomes tests, *pre-test* namely tests given before the learning process, which relate to the basic abilities that students already possess (Supriyadi, 2022). *Post-test* namely a test given after the learning process has been carried out. The test aims to determine the level of achievement of students. Next, the researcher used observations by compiling previous observation sheets as a data collection instrument to collect information about how the Environmental Exploration Approach was used to teach students as well as information about how the RPP practiced the model steps.

Documentation is used to obtain data on students' names and science test scores. The data used as initial data are the results of learning science test scores. So these results show the final value before the research was carried out. This documentation was also used to take photographs during the research.

The data analysis technique in this research uses descriptive statistical analysis and inferential statistical analysis. By using *SPSS 25 software* Normality tests and homogeneity tests were carried out first to determine the distribution of research subjects. Analysis of learning outcomes data in this research was carried out by comparing the data of two sample groups or comparing the data between the experimental group and the control group or comparing the increase in control group data to find the significance of the differences between the learning outcomes of the two groups. As for hypothesis testing, researchers used SPSS 25 software as an analysis tool.

The hypothesis proposed in the research is as follows:

Ha: There is an influence of the JAS approach on students' science learning outcomes. Ho: There is no influence of the JAS approach on students' science learning outcomes.

## Results

### 1.1. Descriptive Statistical Analysis

Descriptive statistical analysis contains a description of the data used in research so that the description of the research subject can be understood clearly. The Environmental Exploration (JAS) approach carried out by the Class IV Science Teacher at SDN Nguter 3 begins with the Preparation Stage: The teacher conveys the learning objectives to the students. The teacher explains the material that students will study. The teacher distributes student worksheets. The teacher guides students to prepare the tools and materials that will be used. The teacher provides guidance to students about the rules and regulations during the activity of exploring the surrounding nature.

Then proceed with the implementation stage of the Environmental Exploration Activity (JAS): Students go on a trip to the surrounding nature exploration location. Students make observations of the surrounding environment. Students collect data and information about the surrounding environment. Students analyze the data and information that has been collected. Students make reports about the results of observations and data analysis. As for the Assessment Stage, the teacher assesses the students' work based on the worksheets that have been distributed. Teachers provide feedback to students about the results of their work. Teachers guide students to improve their work. Teachers give awards to students who have worked hard and got good results



Descriptive analysis is used to provide an overview of the attributes of achieving classroom student learning outcomes *experiment* and *classcontrols*. By using help *SPSS version 25*. Descriptive analysis was carried out to calculate this data analysis using learning outcome criteria, apart from that student learning outcomes were also shown to achieve individual learning outcomes. A student is considered complete in his studies if he meets the minimum completeness criteria set by the school, namely with a minimum score of 75.

Descriptive analysis data from this research are summarized as follows:

**Table 1.** Descriptive Analysis Data for Experimental Class and Control Class

Class	Test	Value	Min Value	Average	Median	Mode
<b>Class</b>	<i>Pre-Test</i>	65	30	43.04	45.00	40
<b>Control</b>	<i>Post-Test</i>	70	50	59.56	80.00	60
<b>Class</b>	<i>Pre-Test</i>	70	45	58.00	60.00	60
<b>Experiment</b>	<i>Post-Test</i>	90	70	80.00	80.00	80

Based on the table above, it can be interpreted that the different classes with treatment get higher descriptive calculation results than classes that do not receive treatment. Judging from the pre-test and post-test scores, the difference in scores in the control class is not very significant when compared to the experimental class. This proves that the treatment can increase the average learning outcomes of the experimental class. To determine the level of significance of this average difference, the researcher continued the analysis process by carrying out inferential statistical analysis and hypothesis testing.

1.2. *Inferential Statistical Analysis*

The normality test is used to determine the data generated in research is normally distributed or not. Data can be said to be normally distributed, if the significant number (Sig) is > 0.05 and if (Sig) < 0.05 then the data is said to be not normally distributed. The normality test used is the Kolmogorovsmirnov test using SPSS 25 software. To clarify the normality test we can look at the table below:

**Table 2.** Normality Test Results

Tests of Normality							
	Class	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
<b>Learning Outcomes Student</b>	Pre-Test Eksperimen	.111	23	.200*	.944	23	.224
	Post-Test Eksperimen	.178	23	.057	.902	23	.028
	Pre-Test Control	.264	10	.046	.850	10	.058
	Control Post-Test	.200	10	.200*	.918	10	.344

Based on table 2, it can be seen that the Pre-Test and Post-Test learning results for both the experimental class and the control class have a significant value (Sig.) > 0.05, so it can be concluded that the data group is normally distributed.

Conclusions in the normality test are based on, if the significant number (Sig.) is

greater than 0.05 then the data can be said to be normally distributed. This test is assisted by the SPSS 25 statistical test tool, namely the Kolmogorov-Smirnov test.

The results obtained are due to the results of the normality test with significant results (Sig) > 0.05. In this study, the normality test can be said to be normal. (Apriyono & Taman, 2005).

To determine the homogeneity of the research data, we used the Homogeneity of Variance test, SPSS Version 25.0 program. With the criteria that if the homogeneity test analysis value (Sig) is > 0.05 then the data is said to be homogeneous and if (Sig) < 0.05 then the data is said to be inhomogeneous. For more details, see the table below:

**Table 3.** Homogeneity Test Results

		<b>Test of Homogeneity of Variance</b>			
		Levene Statistics	df1	df2	Sig.
<b>Learning outcomes Student</b>	Based on Mean	.054	1	31	.817
	Based on Median	.019	1	31	.890
	Based on Median and with 019 adjusted df	.	1	30,998	.890
	Based on trimmed mean	.059	1	31	.809

Based on table 3, you can see the results of the homogeneity test of students' abilities, if you look at the significance value (Sig) > 0.05, so it can be concluded that the data variants for the control class and the experimental class are homogeneous. The rule is important for the two-tie test assuming a large value > 0.05, which means that the variations in each group are similar (homogeneous). The homogeneity test uses the test *Homogeneity of Variance Test* based on a significant value greater than 0.05, it can be concluded that the data is variant *control class* and *experimental class* is homogeneous (Sianturi, 2022).

1.3. *Research Hypothesis Test Results*

Hypothesis testing is carried out to find out whether the independent variable (X) has an effect on the dependent variable (Y), which is the independent variable in this research namely the Environmental Exploration approach method and the dependent variable is learning outcomes. The results of this research hypothesis testing using *independent sample t-test*.



Table 4. Post-Test Hypothesis Test Results

<i>Independent Samples Test</i>		<i>Levene's Test for Equality of Variances</i>		<i>t-test for Equality of Means</i>						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
<b>Result Study Student</b>	Equal variances assumed	.054	.817	-	31	.000	-20.435	2.542	-	-
				8.040					25.618	15.251
	Equal variances not assumed			-	17.343	.000	-20.435	2.532	-	-
				8.070					25.769	15.100

Based on Table 4, it shows that the post-test hypothesis test results in the experimental class and control class were obtained at 0.000. Because the hypothesis test results are less than 0.05, it can be concluded that the hypothesis proposed in the research is accepted (Ha is accepted and Ho is rejected), namely that there is an influence of the Natural Environment Exploration (JAS) approach on the science learning outcomes of elementary school students.

**Discussion**

Improving learning outcomes is the hope of every learner. This means that with developing learning outcomes it can be said that the indicators and learning objectives have been met so that students are ready to implement what they have learned in life. However, on the contrary, learning targets that are not met will make students suffer felt that his learning activities so far seemed in vain. Therefore, maximum efforts must be made to fulfill these learning outcomes both from teaching and learning itself.

From the research carried out at Nguter 03 Elementary School, it can be seen that the learning outcomes of class IVA students as an experimental class before being treated with pre-test scores, there were a few students who got scores above the KKM with a percentage of 4% of students and there were many students who got scores above under KKM with a percentage of 96% of students. After being treated with the JAS approach, the post-test scores received an increase in scores with a percentage of 65% of students who scored above the KKM and a small number of students who scored below the KKM with a percentage of 35% of students who were categorized as poor. (Hartono, 2018).

The hypothesis test in the control and experimental classes obtained a result of 0.000, which is less than 0.005, so it can be said that Ha is accepted and Ho is rejected. Control class and *experiment* taught in this study are identical. Speculative testing is completed using the T- Test or *independent sample t-test*, considering the side effects of theory testing, it may be reasonable that Ha is recognized, so it can be said that there is an influence of the JAS approach on elementary school students' science learning outcomes (Heryana et al., 2020).

From the results of the analysis obtained previously, the researchers obtained data that the experimental class with certain treatments would get maximum results compared to the control class which ran normally or neutrally. This is supported by several studies that have been conducted previously.

Similar research conducted by Sukarman concluded that students became very active in

participating in the learning process using the Exploring the Environment (JAS) learning approach, which in this case was implemented on the concept of classification of living things. This is proven by the results of the analysis of student activity of 81.77. In other words, the JAS approach can have a positive impact on student activities and learning outcomes in accordance with the proposed hypothesis. (Sukarman, 2021)

The second research conducted by Ngabekti, et al. concluded through a meta-analysis of the Exploring the Environment (JAS) learning approach, that the JAS approach is effective when applied in teaching biology in various teaching materials. The JAS learning approach has also succeeded in improving learning outcomes because student-centered learning is very relevant to the more real application of the JAS approach, making it possible to continue to study and develop within the competency-based curriculum paradigm developed (Ngabekti, et al., 2017)

From the two studies above, it can be said that the JAS approach is very effective in the learning process because students will get many benefits. Apart from learning outcomes, improvements in other cognitive, psychomotor and affective abilities can also be achieved. This proves that with a learning approach according to what is needed, students will get closer to their learning goals.

Teaching and learning is a cycle that contains the development of activities between educators and students based on complementary relationships that occur in instructive circumstances to achieve stated goals, so that students can absorb lesson material. In this case, it is not just conveying messages in the form of learning material, but also instilling attitudes and values in students who are learning. Efforts to improve student learning outcomes cannot be separated from various factors that influence them, namely external factors and internal factors. Internal factors influencing learning success originate from the students themselves, namely the physical and spiritual condition of the students.

Meanwhile, external factors that influence learning are environmental conditions around students (Sutiah, 2020).

Various problems arise in human life, and this affects the natural conditions around them. Often the problems faced by humans cannot be solved from one point of view, but a more holistic approach is needed which includes various cross-disciplinary disciplines. Among the objectives of the Natural and Social Sciences (IPAS) subject is for students to be able to play an active role in maintaining the environment, protecting the natural surroundings, preserving the natural environment, managing natural resources and the environment wisely. Another aim is for students to understand who they are, understand how the social environment students live in, and interpret how people's lives change from time to time (Kemdikbud, 2022).

In teaching new material, or at least material that has undergone a revamp, either in the form of a combination or change in material content, the teacher as the spearhead of learning plays an important role in providing a complete understanding so that students clearly understand the student's learning goals. Adjusting the learning approach is one thing that teachers can do by considering the weight of the material to be taught. The science subject, which is a combination of science and social studies subjects, requires an approach that can make this lesson meaningful for students.

In line with the role of IPAS in realizing the Pancasila Student Profile in the Independent Curriculum, teachers must encourage students to foster curiosity about the conditions and phenomena that occur around them. The JAS learning approach embodies this role when seen from various activities that must involve the surrounding environment and the community.

In the science and science subject, there are two important elements that students must master, namely science and social sciences. This element will be easily obtained with realistic learning that is close to the material. Because by directly looking at the situation in the

environment, students will see various kinds of natural environment, culture, local wisdom and social society with its various diversity and problems. So, to deal with problems that arise, with the basic principles of the scientific method that have been taught, students will be trained to think critically, analytically and on target in drawing conclusions. In addition, learning to explore the natural surroundings will stimulate high curiosity.

The use of the Exploring the Environment approach is very supportive in the development of student learning outcomes, enthusiasm for learning, enthusiasm and student understanding of learning material so that student learning outcomes in general can experience improvement, especially in Natural and Social Sciences subjects.

In the future, teachers should be able to do more *concern* on how a learning process can be more meaningful. One way is to adapt the approach to the material that students are studying. Of course, this is preceded by initial consideration and assessment of the situation and conditions of the learning environment. In this research, the JAS approach has been proven effective in improving learning outcomes. Expected

In further research, the development of learning approaches can be adapted more widely to other relevant materials.

## Conclusion

Research on the Environmental Exploration approach to the science and science learning outcomes of fourth grade elementary school students has quite a significant influence. The results of this research were obtained as follows: (a) Application of the Environmental Exploration (JAS) approach to elementary school students shows an increase in learning outcomes in science subjects which are shown in grades *pre-test* (before using the JAS approach) student learning outcomes with a maximum score of 50 and post- test scores (after using JAS) increased with a maximum score of 70. (b) Analysis results *inferential statistics* in hypothesis testing using *independent until t-test* with a value of 0.000 which means it is significant (Sig) 0.05, so it can be said that  $H_a$  is accepted and  $H_o$  is rejected, which means there is an influence of the Environmental Exploration approach on the science learning outcomes of Nguter 03 Elementary School students.

The research results show that the natural exploration approach (JAS) can improve science students' learning outcomes because it can give students the opportunity to learn actively, independently and meaningfully and can also help students to develop critical thinking and problem solving skills.

Based on the results of this research, researchers recommend that educators and/ or policy makers implement the JAS approach in elementary school science and technology learning, in order to provide new learning experiences for students.

## Declarations

### Author contribution statement

The role of each researcher in the research and development of this journal is as follows:

1. Taqwa Nur Ibad (Chairman/Writer 1)

The author made observations at the institution where the research took place to gather information related to the problems faced by teachers and students. Next, the author leads the team to discuss the need to analyze problem solving. The author creates a grand design that refers to problem solving. The data obtained was analyzed by the author using SPSS 25 analysis tools. After that, the author prepared a research report based on the data obtained.

2. Alfiatus Safa'ah (Author 2)

Make observations at the institution where the research takes place to explore information related to problems faced by teachers and students. Next, the author carries out a needs analysis to look for various alternative problems that can be addressed. The author creates a grand design that refers to the need for problem solving. Then the author accompanies teachers in carrying out research at the Institute. From the research data that has been obtained, it is then processed by the author. Afterthat, create a research report in journal form based on the data obtained.

3. Erlinda Dwi Nur Ofita (Writer 3)

The author made observations at the institution where the research took place to gather information related to the problems faced by teachers and students. Next, the researcher coordinated with the school to request the data needed for the research. The author created a grand research design with the research team. Then the author accompanied him during the research process. After that, the author prepares a research report.

**Funding statement**

**Data availability statement**

All data underlying the study results are available as part of the article and no additional data sources are required. This indicates that all the data necessary to understand and interpret the results of the case report are included in the article itself.

**Declaration of interests statement**

Title of Manuscript: THE INFLUENCE OF AN EXPLORING THE NATURE APPROACH ON THE SCIENCE LEARNING OUTCOMES OF PRIMARY SCHOOL STUDENTS BASED ON THE INDEPENDENT CURRICULUM

We have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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