

The Effect of Science LKPD Based Surrounding Environment on Learning Outcomes of Elementary School Students

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Abstract: This study aims to find out how the influence of environment-based science worksheets on the learning outcomes of fifth grade elementary school students, especially in the subject of ecosystems and food chains. This study uses a quantitative method with a type of nonequivalent control group design that will be used in this study. The design to be used is a quasi-experimental design, namely the experimental class and the control class as research subjects. The experimental class is the class that will be studied using a treatment while the control class is the class that is studied using conventional methods or the way the teacher usually teaches. The sampling used in this study were 40 students with 20 students in the experimental class and 20 students in the control class. The collection of research data through tests. The hypothesis test that was carried out was the T test with a Sig (2-tailed) value of 0.717. This value is based on the basics of decision making, so the value is less than 0.05, so H0 is acceptable and shows an increase in student learning outcomes by using environment-based worksheets.

Keywords: Learning Outcomes; LKPD IPA; Surrounding Environmen

Introduction

Education has an important role in advancing a country. One of the supporting things that indicates a developed country is the quality of education in that country. The quality of education can reflect the quality of human resources. The thing that underlies this statement is because education has a curriculum that always keeps up with the times, one of the curricula currently used in education in Indonesia is the 2013 curriculum.

The 2013 curriculum places more emphasis on the learning process which is expected to be able to improve the quality of learning. A fun and meaningful learning process can improve the quality of achievement of student learning outcomes (Indriani, 2022). A teacher must also be able to create a conducive learning environment in the learning process (Sasmita et al., 2023). One of the subjects that requires a conducive learning environment is science. Natural Science is a subject that studies the natural environment (Sari et al.,

2022) which places greater emphasis on understanding concepts, the discovery process using procedures and reasoning so that students can draw a conclusion (Kurniawan et al., 2018; Sari, 2019).

Science subjects essentially have four main elements, namely products, processes, applications and attitudes (Lase et al., 2020). These elements are very closely related to the activities of students towards the surrounding environment. Students through science learning are expected to be able to raise students' curiosity about objects, natural phenomena, living things, and be able to use appropriate procedures to deal with a new problem. Problem solving that can be applied using scientific methods such as making observations, preparing hypotheses, designing experiments, evaluating, measuring and drawing conclusions. Students are expected to be able to apply this in everyday life both for the surrounding environment (Lestari et al., 2022).

However, science learning is very different from the situation in the field. Learning becomes centered on

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the teacher. Students become more passive because science learning tends to emphasize the ability to memorize information given to students. Teachers become more active and in control of the learning process. This makes the student's brain work harder to remember and hoard various kinds of information provided by the teacher, without being given the opportunity to be able to understand and relate it to everyday life. Circumstances like this make students less daring to convey their ideas so that the creativity and independence of students does not develop. Process skills possessed by students also cannot develop properly, due to the lack of experience of students from the learning process (Lase et al., 2020).

Based on the results of interviews that were conducted with homeroom teachers for class V at UPT SDN Sentul 1, students also experienced the same thing. Often find it difficult in the learning process, especially on ecosystems and food chains. Mistakes also often occur in the learning process, especially in grouping animals based on where they live. Learning becomes teacher-oriented because students tend to be less active and teachers dominate learning. This is what causes the limitations of students in obtaining the knowledge, skills and attitudes they need, thus affecting the learning outcomes of students. There are many deficiencies in things that support the learning process such as lack of learning media, limited resources and teaching materials, minimal use of student worksheets (LKPD), giving rise to low student learning motivation to develop their own ideas and experiences resulting in student learning outcomes are lacking (Effendi et al., 2021; Septian et al., 2019).

The results of observations made in the VA and VB classes at UPT SDN Sentul 1 showed that there were still many students who scored below the minimum completeness criteria or KKM for science subjects, which was 70. In the VA class, students whose grades reached KKM was 25. % whereas in class VB students who get scores reach KKM by 35% learn. This shows that the material on ecosystems and food chains is poorly understood by students, so that many students are required to improve grades by participating in remedials held by their homeroom teacher. The following are the learning outcomes of VA and VB class students at UPT SDN Sentul 1.

Based on the presentation of the data above, it can be concluded that many students' scores on ecosystems and food chains are below the KKM. This is closely related to the learning process which does not use supporting things, one of which is the teacher does not use LKPD in the learning process. LKPD or student worksheets is a new name that used to be known as LKS or student worksheets. This change in designation occurred due to different views on education between

teachers and students (Ibrahim et al., 2017). However, this does not change the meaning of the LKPD, namely worksheets that students must work on during the learning process (Sari et al., 2022). According to Prastowo in Sundari et al. (2020) the LKPD contains theories, summaries, and implementation instructions for using LKPD. The purpose of using LKPD in the learning process is to use LKPD activities for students to be involved in the learning process and help teachers to direct students in finding a concept so that learning is no longer teacher-centered but student-centered (Rosliana, 2019).

Table 1. Science Learning Outcomes on Ecosystems and Food Chain Material at UPT SDN Sentul 1

VA class			VB class		
	Name	Scores		Name	Scores
1	S-1	60	1	M-1	70
2	S-2	50	2	M-2	70
3	S-3	60	3	M-3	60
4	S-4	50	4	M-4	70
5	S-5	60	5	M-5	60
6	S-6	70	6	M-6	60
7	S-7	60	7	M-7	60
8	S-8	70	8	M-8	50
9	S-9	60	9	M-9	50
10	S-10	60	10	M-10	70
11	S-11	70	11	M-11	60
12	S-12	60	12	M-12	70
13	S-13	60	13	M-13	60
14	S-14	60	14	M-14	60
15	S-15	50	15	M-15	50
16	S-16	50	16	M-16	60
17	S-17	70	17	M-17	70
18	S-18	60	18	M-18	60
19	S-19	60	19	M-19	70
20	S-20	70	20	M-20	60

According to Apertha et al. (2018) even though the learning process uses LKPD, it does not replace the teacher's role in the learning process. The teacher will act as a facilitator to oversee ongoing teaching and learning activities. In the 2013 curriculum it is also recommended for teachers to use LKPD in the learning process as a complement to teaching materials in learning the 2013 curriculum (Istikharah et al., 2017). In making LKPD, teachers can also take advantage of the environment around the school as a source of teaching materials. Linking the surrounding environment can facilitate students in the learning process, especially in ecosystem and food chain material by utilizing the environment around the school as a source of teaching materials (Sasmita et al., 2023).

The explanation above is in line with research conducted by Lase et al. (2020) which explains that LKPD can be a solution for teachers in making updates and changes in achieving learning goals. Using LKPD

can also direct students to be more active and creative in the learning process, because students can carry out activities according to written directions making it easier for students to acquire the knowledge and skills they need to master (Rahmatillah et al., 2017). This is because in LKPD there are instructions and steps for completing a task, so that in making LKPD it must be clear what basic competencies will be achieved (Falaq, 2017).

Sasmitha et al. (2023) also explained that to avoid boring learning that is based on teacher and student handbooks, a teacher must be able to choose the right learning resources that can help students understand more quickly and not be based on the concepts and material they are learning, read in books. According to Amanah et al. (2023) explains that with the demands of the current curriculum the selection of teaching materials is an important thing to do, because the right teaching materials can affect the learning process. Teachers can take advantage of the environment around the school in making LKPD. The surrounding environment is a real thing for students. Learning by utilizing the surrounding environment has several advantages according to Apriliani et al. (2019), namely students get information from direct experience, knowledge is easier to accept because it is related to everyday life, makes students more communicative, and learning becomes more concrete because they observe directly.

Based on the explanation above, this study aims to find out how the influence of environment-based science worksheets on the learning outcomes of fifth grade elementary school students on ecosystems and food chains. So that the benefits of the results of this research are expected to contribute to improving the learning process, especially on ecosystems and food chains in elementary schools.

Method

This study uses a quantitative approach to the experimental method to be used in this study. The design to be used is a quasi-experimental design, namely the experimental class and the control class as research subjects. The experimental class is the class that will be studied using a treatment while the control class is the class that is studied using conventional methods or the way the teacher usually teaches. So according to Sugiyono (2019) it can be concluded that this experimental method was carried out to find the effect of the treatment given to the experimental class under controlled conditions.

Experimental research type nonequivalent control group design that will be used in this study. The researcher will process the data obtained during the

research using the SPSS version 24 application. The sampling technique used in this study is a proportional random sampling technique because the researcher takes samples randomly to do the research.

This research was conducted in February 2023 at UPT SDN Sentul 1 which is located at Kp. Buah Gede, Sentul Village, Kragilan District, Serang Regency, Banten Province. This research will be carried out in the VA class with a sample of 20 people and in the VB class with a sample of 20 people. The class that will be used as the experimental class is the VA class and the class that will be used as the control class is the VB class.

Researchers will use the pretest and posttest which will be carried out in the experimental class and the control class. The pretest was conducted to find out how far students understand material about ecosystems and food chains. While the posttest was carried out to find out how far students understood material about ecosystems and food chains after being given treatment for the experimental class and in a conventional way for the control class. In the experimental class, treatment will be given in the form of worksheets based on the surrounding environment. In the control class, treatment will be given in the form of the teacher's worksheet as usual.

The instrument given is in the form of a test instrument using 25 questions regarding the material of ecosystems and food chains. The instrument test will be tested by conducting validity, reliability, level of difficulty and differentiating power of each item used before being given to students. The following is a test instrument grid regarding ecosystem material and food chains.

Table 2. Grids of Material Test Instruments for Ecosystems and Food Chains

Basic Competencies	Question Indicator	Question Form	Question Number
1 3.5 Analyze the relationship between ecosystem components and food webs in the surrounding environment	Analyze the relationship between ecosystem components and food webs in the surrounding environment	Essay	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

The data obtained from this study will be analyzed statistically because the data obtained will be translated into quantitative data or in the form of numbers (Supriantoro, 2022). To achieve the objectives of this study, the first thing the researcher will do is to test the prerequisites first before knowing the hypothesis test that will be used. The first thing is to do a normality test to find out if the data used is normally distributed or

not normally distributed. Second, do a hypothesis test to find out whether the data is homogeneous or not. Next, do a hypothesis test to prove the hypothesis that the researcher has written. The hypothesis test that will be used is the Paired T-test if the data is normally distributed and the Mann Whitney test if the research data is not normally distributed. Researchers used the help of the SPSS application version 24 to process the data that researchers got from this study.

Result and Discussion

Learning activities are carried out by carrying out preliminary activities, namely reading prayers led by the class leader, followed by the researcher checking the readiness of students and the presence of students, and the researcher doing apperception and providing motivation, then the researcher mentions today's learning objectives and relates today's learning with previous learning. After carrying out the initial activities, the researchers continued with the core activities, in the core activities of the researchers before providing the material to be studied, the researchers gave a pretest regarding ecosystem and food chain material. The pretest was carried out in the VA class as the experimental class and in the VB class as the control class. The following are the results of the experimental class and control class pretest.

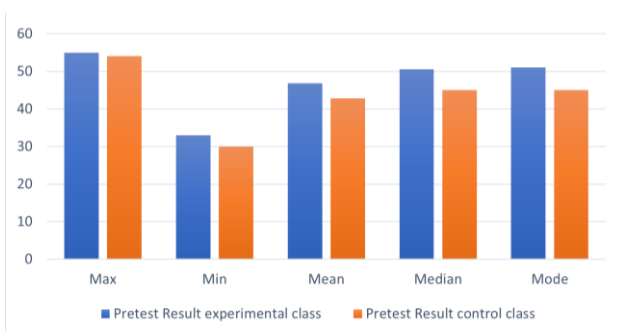


Figure 1. Pretest results on ecosystems and food chains

The results of the analysis on the data above are, from the pretest activities that have been carried out, students in the experimental class and control class obtain a maximum score in the experimental class of 55 and in the control class of 54. The minimum value in the experimental class is 33 and the control class is 30. The mean in the experimental class is 47 and in the control class is 43. The median in the experimental class is 51 and in the control class is 45. As well as the mode in the experimental class is 51 and in the control class is 45. It can be concluded that the average initial ability of students at the experimental class and the control class did not find much difference.

After conducting the pretest and knowing the students' initial abilities, the researcher gave another explanation regarding the material on ecosystems and food chains. Furthermore, the researchers gave LKPD based on the surrounding environment to the experimental class, namely the VA class and the usual LKPD in the student book to the control class, namely VB class. After that the researcher gave the posttest to the students. Posttest was carried out in the experimental class and control class. The following are the posttest results of the experimental class and the control class on ecosystems and food chains.

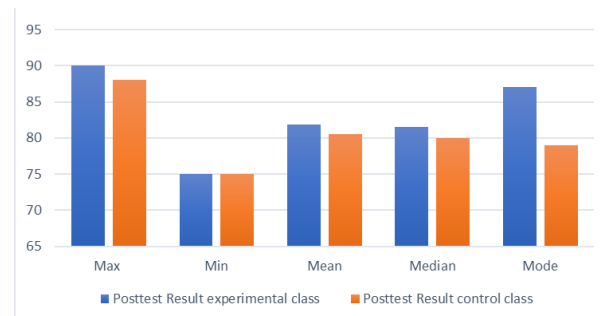


Figure 2. Posttest results on ecosystems and food chains

The results of the analysis on the data above are, from the posttest activities that have been carried out, students in the experimental class and control class obtain a maximum score in the experimental class of 90 and in the control class of 88. The minimum value in the experimental class is 75 and the control class is 75 the mean in the experimental class was 82 and in the control class was 81. The median in the experimental class was 82 and in the control class was 80. As well as the mode in the experimental class was 87 and in the control class was 79. It can be concluded that the average posttest score of students in the experimental class and the control class found no significant difference.

After analyzing the data obtained from the results of the pretest and posttest results that have been carried out in the experimental class, namely the VA class and the control class, namely the VB class, then the researcher conducted a normality test to determine whether the data obtained was normally distributed or not normally distributed. The normality test was carried out using the SPSS application using the Kolmogorov – Smirnov normality test. The data were obtained from the experimental class using the surrounding environment-based LKPD and the usual LKPD in the student textbooks used by the control class. The following are the results of the normality test that was carried out on class VA and VB material on ecosystems and food chains.

Table 3. Student Pretest and Posttest Data Normality Test Results

Group		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
N-gain	Experimental class	.120	20	.200*	.974	20	.837
	Control class	.111	20	.200*	.971	20	.776

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the normality test data that has been carried out using SPSS version 24, it can be seen that the Sig Kolmogorov-Smirnov value obtained in the experimental class and control class is 0.200. Judging from the basic decision makers that have been determined, the experimental class and control class > 0.05. This explains that the data in the experimental class and control class are normally distributed data because the value of Sig. 0.200 > 0.05.

After carrying out the normality test, the next thing to do is to test the homogeneity of the data. Homogeneity test aims to determine whether the data is homogeneous or not homogeneous. To test the homogeneity of a data researcher uses the SPSS application with One-way ANOVA to assist data processing. The following are the results of the homogeneity test using the homogeneity test.

Table 4. Student Pretest and Posttest Data Homogeneity Test Results

ANOVA						
N-gain		Sum of Squares	df	Mean Square	F	Sig.
Between Groups		.001	1	.001	.133	.717
Within Groups		.258	38	.007		
Total		.259	39			

Table 5. T-test Hypothesis Test Results

N-gain		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
				F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
Equal variances assumed	Equal variances not assumed									Lower	Upper
		2.196	.147	.365	38	.717	.00951	.02606		-.04326	.06227
				.365	35.603	.717	.00951	.02606		-.04337	.06239

The data above was processed using the SPSS application using One-way ANOVA because of the variance of the two population groups. Based on these data, it can be seen that the Sig value obtained in the experimental class and control class is 0.147. Judging from the basics of decision makers, it is found that the Sig value obtained is > 0.05. This explains that the data is homogeneous because 0.147 > 0.05. Furthermore, a hypothesis test was carried out to prove the hypothesis that the researcher had proposed, namely:

- H₀: By using worksheets based on the surrounding environment, there is an increase in the learning outcomes of class V students on ecosystems and food chains
- H₁: By using worksheets based on the surrounding environment there was no increase in the

learning outcomes of class V students on ecosystems and food chains

Based on the normality test and homogeneity test that has been carried out, it is found that the data is normally distributed and is homogeneous because the sig value obtained is > 0.05. The next thing to do is to test the hypothesis that has been proposed by the researcher. The hypothesis test that will be carried out is the T test, because it fulfills the data requirements for normal distribution and is homogeneous. The following are the results of the T-test hypothesis test.

This experimental research was conducted in two parallel classes, namely the VA class as an experimental class that used the surrounding environment-based LKPD on ecosystems and food chains material and the VB class as a control class that used the usual LKPD used by the teacher on ecosystems and food chains material.

This study used a sample of 40 students, each class using 20 students as the research sample.

Based on the results of the data that has been analyzed, the learning outcomes on ecosystem material and food chains in the experimental class using the surrounding environment-based LKPD and the control class using the LKPD commonly used by the teacher can be described as follows:

- a) In the experimental class using LKPD based on the surrounding environment, the pretest value was obtained with an average or mean value of 47 with the highest or max value of 55 and the lowest or min value of 33. The median and mode in these data were 51. Meanwhile, for the posttest score obtained an average score of 82 with the highest score being 90 and the lowest score being 75. The median and mode in this data are 82 and 87.
- b) In the control class using the LKPD that the teacher usually uses, the pretest score is obtained with an average score of 43 with the highest score being 54 and the lowest score being 30. The median and mode in this data are 45. Meanwhile, for the posttest score with the average the average score is 81 with the highest score being 88 and the lowest score being 75. The median and mode in this data are 80 and 79.
- c) Based on the results of the second hypothesis test, the posttest value of the group of students using the surrounding environment-based LKPD with students using the LKPD that the teacher usually uses, obtained a Sig (2-tailed) score of 0.717. Based on the basics of decision makers testing the hypothesis using this T test, H₀ is accepted, namely by using worksheets based on the surrounding environment, there is an increase in learning outcomes for class V students on ecosystems and food chains.

Student worksheets or commonly known as LKPD are one of the supporting materials for the success of the learning process for students. Learning objectives can also be achieved by using appropriate LKPD for students. Students can also become more active in the learning process. The active attitude of students in the learning process is something that is expected in the 2013 curriculum. According to Prianto and Harnoko in Dermawati et al. (2019) explain the benefits and objectives of LKPD namely students can become active in the learning process, students are able to develop learning concepts, train students in the process of finding and developing the information obtained as well as being a guide for teachers in compiling lessons. Using the right LKPD can be used as a solution to problems that exist in the learning process, such as passive

students so that students' interest in learning becomes low.

LKPD that is appropriate for use in the science learning process, especially for ecosystem and food chain materials, can use LKPD based on the surrounding environment. Students will be more interested in learning this material by using examples that exist in the environment around students. This statement is in line with research conducted by Dermawati et al. (2019) which explains that by using environment-based worksheets around students become more interested in this learning, because students can work according to what is in their environment.

This is in line with Toaini's research (2023) which explains that the use of the surrounding environment also has an impact on students' learning motivation to become more active and creative. Yasin et al in Sugiarti (2022) also explained that by utilizing the surrounding environment it would make it easier for students to absorb the learning provided. Therefore, the learning process of students using worksheets based on the surrounding environment can enable students to independently explore the knowledge being taught (Tanjung et al., 2023). Real experience in seeing the theory that has been taught by the teacher will be obtained by students. Thus, students will get better memory and knowledge of the things they learn. Thus, the learning process becomes more optimal and can have a good effect on student learning outcomes.

Conclusion

Based on the results and discussion previously described, it can be concluded that the learning outcomes of fifth grade students on ecosystems and food chains can be improved through LKPD based on the environment around students. This was proven based on the results of the posttest that had been obtained from the experimental class using the surrounding environment-based LKPD with the control class using the LKPD commonly used by teachers to get the result that there was a difference with the average value obtained was the experimental class, namely 82 and the control class, namely 81 then, a hypothesis test was carried out using the T test to obtain a Sig (2-tailed) value of 0.717. This value is based on the basics of decision making, so the value is less than 0.05, so H₀ is acceptable and indicates an increase in student learning outcomes by using the surrounding environment-based LKPD. Using worksheets based on the environment around students becomes more interested in the learning, because students can work according to what is in their environment. Real experience in seeing the theory that has been taught by the teacher will be obtained by students. Thus, students will get better memory and

knowledge of the things they learn. Thus, the learning process becomes more optimal and can have a good effect on student learning outcomes.

Author Contributions

Mega Krisdiana conceptualized the research idea, designed of methodology, analyzed data, conducted a research and investigation process, management and coordination responsibility, writing—original draft preparation. Mafdurotul Goliah conceptualized the research idea, conducted a research and investigation process, management and coordination responsibility, literature review, writing—review and editing. Siti Malihah conceptualized the research idea, conducted a research and investigation process, management and coordination responsibility, literature review and provided critical feedback on the manuscript. Lukman Nulhakim provided critical feedback on the manuscript, supervision. Suroso Mukti Leksono provided critical feedback on the manuscript, supervision.

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Conflicts of Interest

The authors declare no conflict of interest.

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