



PJBL -Focused Project Learning to Cultivate Environmental Awareness in Elementary Schools

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Abstract. PJBL is project-based learning to increase students' creativity by linking it to students' daily lives. The focus of learning lies in creating projects to instill environmental awareness in elementary schools by producing products in the form of posters of me and the environment around me. In this lesson, students are divided into groups consisting of four to five children in one group. The pictures in the poster are of students' daily activities. Learning conducted in groups aims to increase students' self-confidence in expressing opinions and respecting each other's opinions. The aim of this research is to determine the role of PJBL-based learning models in increasing environmental awareness in elementary schools. This learning collaborates with class V educators in the Pancasila Education subject to implement the learning, and class V students. This research uses the Research and development (R&D) method with the ADDIE model. Data collection techniques use observation and interviews to analyze the needs of educators and students. The data analysis technique uses data collection, feasibility testing, reliability testing, and product moment correlation validity testing. Product feasibility testing using material experts, language experts and module presentation experts.

The results of this research produce a product in the form of a module which contains LKPD with the PJBL learning model. The product feasibility test states that this module product is suitable for use or does not need revision. The results of the test scores were quite good with scores above the criteria for achieving learning objectives (KKTP) set by educators. The results of the research and supported by previous research, show that the PJBL learning model is effective in increasing environmental awareness in elementary schools.

Key words: PJBL, LKPD, R&D

I. INTRODUCTION

Education according to Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System Chapter I Article 1 (1) states that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength. , self-control, personality, intelligence, noble character, and skills needed by himself, society, nation and state. The aim of education is to provide a place where students can develop their full potential, especially the ability to think creatively (Sulistiyowati, T, et al. (2023)). Education is considered

to be the main focus for intellectual development and character formation of students, so it is important for educational institutions to pay attention to course preparation (Humaedah, Huma. (2021)).

Education is a means used by a person or society to change their morals and behavior in an effort to achieve independence so as to mature or mature humans through education, learning, guidance and coaching (Pristiwanti, D., et al. (2022)). The curriculum can be interpreted as a plan for all learning activities and functions as a reference material for planning, implementing, monitoring and evaluating all educational activities to achieve educational goals (Indah, Rizki, Ramadani., et al. (2021)). The curriculum is an important part of education and the curriculum is defined as the program offered to students (Fajri, N, K. (2019))

The nature of the curriculum is dynamic. The curriculum continues to change in response to developments over time, science and technology, the level of intelligence of students, culture, values and community needs (Rahayu, Yulia. (2023)). LKPD can provide an opportunity to encourage students to be actively involved with the material being discussed (Suryani, AI (2022)). The use of Student Worksheets (LKPD) in carrying out learning activities increases students' reading and writing activities and encourages students to think critically about the lesson material, so that they are more active, easier to absorb and understand the content presented in the LKPD (Suratman, A., et al. (2021)

The presence of the PjBl model is expected to increase students' learning motivation, improve students' skills and creativity in creating projects, strengthen the role of collaboration and group collaboration, and develop planning skills (Diana, Susanti., et al. (2020)). LKPD is a learning resource that can be developed by educators as facilitators of student learning activities (Tussholeha, Z., et al. (2023)). Discussion learning is still rarely done because educators still most often use the lecture method (Ulfa, LNH, et al. (2022)). This shows that learning activities are still focused on discussion and lecture methods, with few opportunities for students to practice. Learning focuses on theory and conceptual understanding (Putri, Ratna, Sari., et al. (2021)).

Educators feel that project-based learning is time consuming even though there is still material that must be covered (Vina, Serevina., et al. (2022)). According to Rudy Nurhadi Wijayanto, S.Pd as class V teacher at SD N 2 Prambanan, said that children often get carried away with habits when they are at home. These habits include not throwing away rubbish in the right place, and storing used food wrappers in desk drawers. Habits that students carry out, if they are not reminded by educators to change them, will have a bad impact. Rudy Nurhadi Wijayanto, S, Pd also revealed that educators must monitor the picket schedule every day and remind students to obey the agreed rules. This discipline is carried out by educators to increase students' environmental awareness, especially in the school environment. Bad habits can be changed by implementing good habits according to the class V teacher at SD N 2 Prambanan.

II. LITERATURE REVIEW

PANCASILA EDUCATION MODULE

Modules are printed media that contain learning units and various methods that enable students to achieve their goals independently with little support from educators or self-assessment of their abilities. Who can decide where to carry out the next learning activity (Wena, Made. 2014; Kuswanto, J. (2019)). Pancasila and Citizenship Education (PPKn) studies how to be a good citizen, develop values, morals, behavioral attitudes, and be able to uphold the values of Pancasila which are the foundation of the Indonesian nation (Nursyamsiana, F., et al. (2023)). Student Worksheets or their abbreviation (LKPD) are part of the learning tools. The learning process requires LKPD as an important component developed by educators for students.

LKPD contains material that helps students become more active and gain meaning from the learning process (M., Anggrayni., Riyadi, Saputra. (2023)).

LKPD is teaching material used in teaching and its use is very important to achieve the objectives of learning activities. LKPD is used to maximally involve students in the learning process (Salsabila, V, A., Rinaningsih. (2023)). LKPD is a means of supporting and advancing teaching and learning activities, creating effective interaction between students and educators, as well as improving students' learning activities and outcomes (Radeswandri, Radeswandri., Rian, Vebrianto. (2023)).

LEARNING MODEL

The learning model can be used as a selection pattern. In other words, educators choose the right and efficient learning model to achieve their educational goals (Putri, Khoerunnisa., Syifa, Masyhuril, Aqwal. (2020)). A learning model is an approach or method in the learning process that is designed to help students obtain information and skills through interaction between students and educators or between students and the learning environment (Hasyim, Mahmud, Wantu., et al. (2023)). The learning models included in a unique curriculum vary greatly by subject and grade level. One possible learning model is a problem-based or project-based learning model so that learning becomes more meaningful (Mandalika, WPF, Priyanti, BA, Puspitasari, LM, et al. (2024)).

PJBL

Project-based learning is a learning process where students are directly involved in creating projects (Lin, Lina, Herlina., et al. (2022)). The Project Based Learning Model (PjBL) is a project-based learning strategy where students create finished products that can be applied to real world problems (Salsabila, Hadzami., Lu'luil, Maknun. (2022)). PjBL facilitates a paradigm shift from teacher-centered learning to student-centered learning. Learners actively work to define projects, identify problems, and develop solutions. They have greater control over their own learning process (Aris, Doyan., Mahrus, Mahrus., Susilawati, Susilawati., Yayuk, Andayani., Muntari, Muntari. (2023)). The reason for using the PjBL model is that it is project-based and provides opportunities for students to explore content (material) and experiment together using various methods that are meaningful to them (Nurmiati, Nurmiati., et al. (2023)). The main goal of project-based learning is to develop students' intrinsic motivation to acquire knowledge independently, collaborate and think creatively while developing skills to overcome real-world challenges (Maduratih, K., Bakhtiar, A, M. (2024)). PjBL steps include basic questions, preparing project plans, preparing schedules, monitoring, testing results, evaluating experience according to Hobri., et al. (2018).

PJBL'S ADVANTAGES AND DISADVANTAGES

The advantages of the PjBL learning model are: (1) Students are able to express and solve real world problems and examples, and apply them to new situations. (2) Students can develop analytical, cooperative and communication skills. (3) learning refers to the concept of student-centered learning, so that students participate more actively in the learning process; and (4) students develop cognitive, emotional and psychomotor skills and abilities in group discussions, and can develop critical thinking. (Trianto, 2011; Hikmah, 2016; Rusdi, 2019; Akhyaruddin, Akhyaruddin., H., Yusra, 2023). The PjBL learning model is burdensome and time consuming for both educators and students, continuous group learning causes loss of confidence in independent learning due to lack of individual experience (Almulla, 2020; Dewi, MR 2022)).

ENVIRONMENTAL AWARENESS

Environmental awareness is a state of awareness and knowledge of something that is closely related to the environment and can be reflected in the actions and actions of each individual (Neolaka, 2008; Munawar, S., et al, 2019). The benefits of environmental awareness are more paying attention to the causes of environmental problems, students will be able to better consider and analyze the impact of their actions on the environment, which will ultimately lead to harmonious harmonization of all its elements leading to a balanced life (Nugroho, MA (2022)) . Environmental education is the process of increasing students' environmental awareness so that they are able to solve problems caused by the environment with aspects of knowledge, skills and attitudes (Daryanto, 2013; Yanti, Y. Et all, 2020). A special characteristic of environmental awareness is the importance of people's desire to protect nature and the environment and improve its conditions, especially since humans are part of nature (V., V., Moshura. (2023)).

III. METHOD

This research uses the *Research & Development (R&D) method* . The *Research & Development (R &D)* method is a research method that produces a product in a certain field of expertise, which is followed by certain by-products and has the effectiveness of that product (Budiyo, 2017). The development in this research is in the form of developing teaching modules, with a focus on LKPD project based learning models to increase students' environmental awareness.

R&D has many development models, researchers chose one development, namely the ADDIE model. The ADDIE model has stages in the product development process which include analyzing, designing, developing, implementing and evaluating (Ulfa et al, 2023). The process of analyzing the needs of students and educators, researchers used observation data collection techniques for 38 students at SD N 2 Prambanan, as well as 2 homeroom teachers for class V. Class V at SD N 2 Prambanan was divided into 2 class groups.

IV. RESULTS AND DISCUSSION

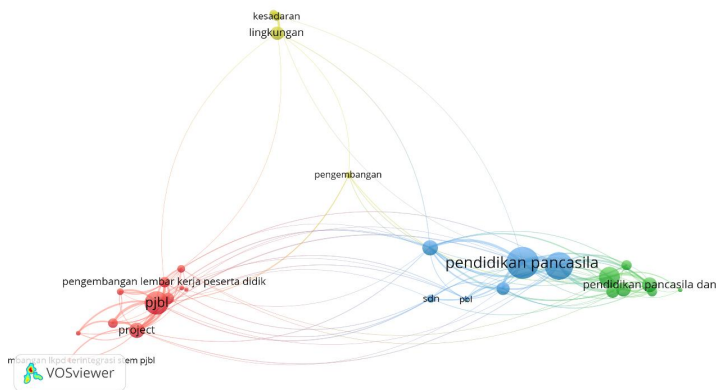


Figure 1. Map of Environmental Awareness Research Gap

We can see in the research gap in the picture above that there is not much research examining environmental awareness from 2020 to 2024. The lines that connect one to another, it can be concluded that the

development of LKPD to increase environmental awareness was researched by several researchers. This research gap is divided into four clusters which are marked with four different colors.

The first cluster in red contains the development of LKPD, PJBL and Projects. The second cluster is blue, there is Pancasila, PJBL and Elementary School education. The third cluster is colored yellow, environmental awareness and development, the fourth cluster is Pancasila educators.

1. Results

The aim of this development is to develop a PJBL model student worksheet product to increase environmental awareness. Researchers conducted a needs analysis using interviews and observations before carrying out development. According to Rudy Nurhadi Wijayanto, S.Pd as the homeroom teacher for class V at SD N 2 Prambanan, Rudy Nurhadi Wijayanto, S.Pd, as the homeroom teacher for class V at SD N 2 Prambanan, said that children often get carried away with their habits when they are at home. These habits include not throwing away rubbish in the right place, and storing used food wrappers in desk drawers. Habits that students carry out, if they are not reminded by educators to change them, will have a bad impact. In conclusion, SD N 2 Prambanan needs learning tools that can increase environmental awareness in students, one of which is the PJBL model LKPD. Researchers carried out development using the ADDIE stages. The following are the stages carried out by researchers:

a. Analyze.

Stage analysis is used for analyze need problem And do analysis task . On this stage the researcher do interview with para educator Which teach Pancasila V education . Observations were made on student Class V on moment carry out study Pancasila education . Through interview And observation , researcher obtain data For designing Pancasila Education LKPD .

Rudy Nurhadi Wijayanto, S, Pd also revealed that educators must monitor the picket schedule every day and remind students to obey the agreed rules. This discipline is carried out by educators to increase students' environmental awareness, especially in the school environment. Bad habits can be changed by implementing good habits according to the class V teacher at SD N 2 Prambanan.

Researchers also made observations to find out the learning process in the classroom. In both classes at SD N 2 Prambanan, it can be seen that there are still students who do not understand the material being taught by educators and are embarrassed to ask questions. The class has quite complete facilities, equipped with a TV screen for learning as a means of supporting learning. Researchers observe that educators still use printed books from the government. Each student's different grasp of material is one of the factors that influences the learning process. The role of educators is very important, to direct the flow of learning that is being carried out.

b. Designing.

In the design stage, the researcher created the LKPD design using the help of the Canva application. The Canva application has many features that researchers can use to create LKPD. The researcher first makes a design regarding the contents of the LKPD that will be developed. The following is an overview of the contents of the Pancasila Education LKPD to instill environmental awareness in students:

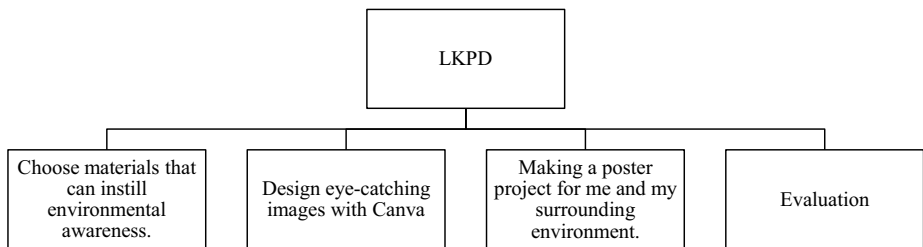


Figure 2. Draft LKPD content

The material used to develop the LKPD was taken from the student book, chapter four, sub-chapter 2, me and my surrounding environment. Researchers used the Canva application to create posters and LKPD templates. In the first stage of making the design, the researcher chose a blank page on Canva with an A4 document size. Next, the researcher selects an image in the element section to start the design. The finished design is downloaded and ready to be tested by 3 validation experts.

The stages of project creation in the LKPD are adjusted to the stages of the PjBL learning model. The basic questions in this project are related to the students' environmental conditions, such as helping their mother and cleaning the house. Drawing up a project plan, the researcher used paper and colored pencils to make a poster about the environment.

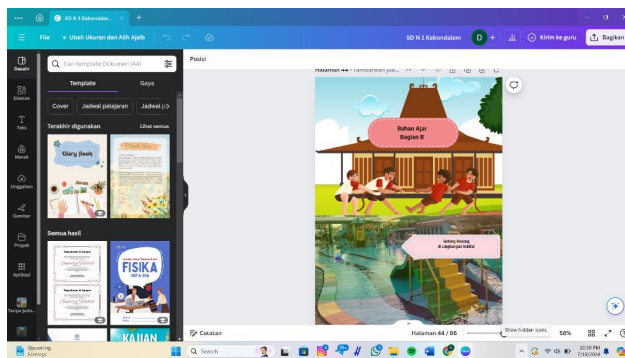


Figure 3. Canva application

This PjBL LKPD contains a sheet regarding the agreed time for project creation that will be carried out by educators and students so that students can determine the length of time for project creation. This LKPD also contains a table that is used to monitor students' willingness to create poster projects for me and the environment around me.

c. Develop.

The products that researchers have created are then tested by validator experts. The expert who validates the product has a doctoral education and is one professor. The following are the validation results from product validator experts who were developed:

Table 1 Validation experts

NO	NAME	FIELD	Xi	AMOUNT
1	Dr. Tri Indarti, S.Pd., M.Pd	Material expert	5	9
			4	6
2	Iisrohli Irawati, M. Hum	Linguist	5	4
			4	6
3	Prof. Dr. Bambang Sumardjoko, M.Pd	Member of the e-module presentation	5	6
			4	4

Questionnaire validation Which obtained expert in field material obtain results 87.34 % said not yet revised/fit to be implemented. Expert in field Language obtained 80% calculation questionnaire which is validated without revision/eligible. Expert in field LKPD demonstration obtained 92% results calculation questionnaire , states results not yet revised/feasible to implement. Calculation para expert show that the Pancasila Education LKPD is intended to embed awareness environment in student environment.

d. Apply.

On stage implementation , researcher moreover formerly do modification of LKPD based on suggestion And input given by the validator or input addition from examiner . Enhancement effectiveness And results Study learners seen from growing experience application of LKPD on question sentence on student Class V SD N 2 Prambanan. Increased interest learners seen from results test given by the researcher to them , thereby influencing results Which obtained . Learners Class V SD N 2 Prambanan can succeed do study with help educator study .

The implementation of the Student Worksheet (LKPD) took place on 23-25 April 2024 with a total of 38 students and 2 Pancasila Educator subject educators. Researchers and educators use LKPD to achieve these goals. During implementation, researchers applied the material on the first day and educators applied the LKPD from subchapter 2 on the second day. In the implementation cycle, researchers also provide LKPD guidance for educators. LKPD for Educators includes a step-by-step tutorial for using LKPD at each stage. This test was carried out by researchers after implementing the Pancasila Education LKPD to instill environmental awareness. Researchers use tests to see how much students' interest in learning increases. The following are the results of tests carried out by researchers on class IV students of SD N 2 Prambanan:

Table 2. Results of student scores

Before implementing LKPD				After implementing the LKPD			
No	Mark	Amount	Percentage	No	Mark	Amount	Percentage
1	60	9	26%	1	80	9	24%
2	65	10	29%	2	85	15	39%
3	70	10	29%	3	90	5	13%
4	80	6	17%	4	95	9	24%

After using the LKPD, students' test results obtained a maximum score of 100 points and a minimum score of 80 points, whereas before using the LKPD, the maximum score before the test was 60 points and a minimum score of 80 points, so it can be assumed that after using the LKPD, their academic achievement has improved. However some students basically remain at the same level. The test results were designed to find out whether students' learning results and interest had improved after using LKPD to instill students' environmental awareness. There is a good increase, indicating that students' environmental awareness of the surrounding environment has increased.

e. Evaluate.

This evaluation stage is to understand students' reactions to the use of LKPD. After completing the problem-based LKPD, students were given a response questionnaire using 10 questions with answer choices of strongly agree, agree, neutral, disagree, and strongly disagree. This questionnaire survey was conducted on 38 class IV students at SD N 2 Prambanan. The following is data on student responses to the questionnaire:

Table 3. Validity test with the help of the SPSS 27 application

No	t count	t table	Information	No	t count	t table	Information
1	0,515	0,264	Valid	6	0,498	0,264	Valid
2	0,716	0,264	Valid	7	0,772	0,264	Valid
3	0,473	0,264	Valid	8	0,565	0,264	Valid
4	0,818	0,264	Valid	9	0,728	0,264	Valid
5	0,551	0,264	Valid	10	0,359	0,264	Valid

The significance level calculated for students' responses to the questionnaire was 5% and the t-table was 0.264. The calculations in the table above show that the students' responses to the 10 questions in the questionnaire were declared valid. After carrying out the validity test calculations above, the researcher used the SPSS 27 application to carry out the data reliability test as follows:

Table 4. Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
,796	10

The way to read the table above is if the Cronbach's alpha value is > 0.6 then the questionnaire instrument is reliable, if the Cronbach's alpha value is < 0.6 then the questionnaire instrument is not reliable. So it can be concluded that the student response questionnaire applied to students is reliable. Because the Cronbach alpha value is > 0.6 ($0.796 > 0.6$). After applying the student response questionnaire, the researcher conducted a test.

Researchers obtained some information about students' responses to LKPD based on mathematical sentence questions. One of the students answered "Ma'am, LKPD is easy to do" and another student answered "Ma'am, this game is fun". With students' immediate enthusiasm for the Pancasila Education LKPD to instill environmental awareness, the researchers can conclude that the problem-based LKPD developed is able to increase students' interest in learning while using it. The students' enthusiasm was also seen when they rushed forward to present the results of their discussions.

2. DISCUSSION

a. Characteristics of Pancasila Education LKPD to instill environmental awareness in students.

- 1) The attractive images displayed by the Pancasila Education LKPD are designed to instill environmental awareness and are characterized by attractive educational material and LKPD images. The Canva application provides many features so that researchers can easily compile this LKPD. An attractive image is one of the attractions of the Pancasila Education LKPD to instill environmental awareness. The use of realistic visual media stimulates students' curiosity, increases concentration, stimulates learning, and can increase students' interest in learning through activities and results Zainul, Fajri et al (2022).

Attractive images are designed to increase students' interest in learning. The use of media in learning can attract students' interest in learning and make students always try to discover and develop their talents, so that it will have a big impact on their learning outcomes Komang & Gusti (2023). When students feel happy while taking part in learning, they will more easily accept the material explained by the teacher. As stated by Komang & Gusti (2023) in their research, students who feel happy or enjoy their courses will continue to study what they like. Pictures are considered the best learning media because they can clearly illustrate relevant topics or material in the text that will be delivered by educators and can make it easier for students to understand Mukhamad, Ardiansyah, Efendi. (2021).

- 2) Diverse character animations Various animated characters in electronic modules can increase reader interest. The books used by students do not have many animated characters so the reading atmosphere becomes monotonous. Animated characters in the electronic Pancasila education module to instill environmental awareness according to the age of fifth grade children. According to Eko Risdianto, et al. (2023) in their research stated that students enjoy learning when activities give them results and help them remember. According to Radiansyah, et al. (2023) in their research stated that students no longer have to always rely on the words of educators who simply teach material in lecture format, but they also need to be actively involved in developing their thinking skills when facing problems. The project-based learning model (PjBL) was chosen because it provides students with the opportunity to work more independently, develop their own learning, be more realistic, and create products (Sholekah, AW (2020)).
- 3) Clear learning stages will help educators guide the learning process better. Only in this way can learning objectives be achieved well. LKPD has been adapted to various stages of the PJBL learning model. This learning model is gradual, so that educators can learn according to the stages of each learning model even if they don't remember the steps of the learning model. According to Abarang, N. and Delviany, D. (2021), choosing the right learning model that suits students' conditions is a long and big step in improving student performance or achievement.

b. Feasibility of the Pancasila Education LKPD product to instill environmental awareness in students.

The feasibility of this LKPD has been tested by three experts with Doctoral degrees. The feasibility of the Pancasila Education LKPD product is known through the results of calculation and verification tests. The validation questionnaire obtained by experts in the material field obtained results of 87.34% stating that it had not been revised/suitable for application. Linguistic experts calculate that 80% of questionnaires that have been validated do not require revision/are suitable. Experts in the field of LKPD implementation obtained 92% of the questionnaire calculation results, stating that the results had not been revised/feasible to be implemented .

The material, language and presentation of the LKPD have been verified by experts and are said to be appropriate because they meet the specified indicators. This book can be used by elementary school educators and fifth grade students. The Pancasila Education LKPD has also been adapted to the current curriculum, namely the independent curriculum.

c. The effectiveness of using Pancasila Education LKPD to instill environmental awareness.

The effectiveness of this LKPD can be seen from the learning results obtained before and after using the Pancasila Education LKPD to instill environmental awareness. The score results before implementing the LKPD were obtained from educators who had implemented chapters 1 and My Environment. The test questions consist of 10 multiple choice questions and 5 descriptive questions.

After the implementation of the Pancasila Education LKPD to instill environmental awareness, student learning outcomes increased. Based on the comparison of learning outcomes before and after it is said that learning outcomes have increased. Before the learning LKPD was implemented, students got a score lower than the standard completion score, whereas after it was implemented students got a score higher than the standard completion score. The student scores obtained before implementing 60 were 26%, 65 were 29%, 70 were 29%, and 80 were 17%. Student scores after implementing LKPD 80 were 24%, 85 were 39%, 90 were 13%, and 95 as much as 24%.

Students can also practice how to protect the environment. Able to provide opinions about environmental awareness and protecting the surrounding environment. Students are able to express their opinions about how to protect the surrounding environment.

V. CONCLUSION

1. The Pancasila Educator LKPD to instill environmental awareness in students has characteristics in the form of attractive images on the LKPD display and teaching materials, animation of various characters, learning according to the learning stages.
2. The feasibility of the Pancasila Education LKPD product is known through the results of calculation and verification tests. The validation questionnaire obtained by experts in the material field obtained results of 87.34% stating that it did not require revision/was suitable for implementation. Linguistic experts calculate that 80% of questionnaires that have been validated do not require revision/are feasible. Experts in the field of LKPD implementation obtained 92% of the questionnaire calculation results, stating that the results did not require revision/were feasible to implement.
3. After the implementation of the Pancasila Education LKPD to instill environmental awareness, student learning outcomes increased. Based on the comparison of learning outcomes before and after it is said that learning outcomes have increased. Before the learning LKPD was implemented, students got a score lower than the standard completion score, whereas after it was implemented students got a score higher than the standard completion score. The student scores obtained before implementing 60 were 26%, 65 were 29%, 70 were 29%, and 80 were 17%. Student scores after implementing LKPD 80 were 24%, 85 were 39%, 90 were 13%, and 95 as much as 24%.

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