

## **DEVELOPMENT OF STUDENT WORKSHEETS (LKPD) PROBLEM-BASED LEARNING (PBL) WITH PRACTICUM METHOD FOR CLASS VII OF JUNIOR HIGH SCHOOL 03 SURUH ON ENVIRONMENTAL POLLUTION MATERIAL**

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### **Abstract**

This research aims to determine: The feasibility of student worksheets problem-based learning whit the practicum method for class VII of junior high school 03 Suruh on environmental pollution material, the practicality of student worksheets problem-based learning whit the practicum method for class VII of junior high school 03 Suruh on environmental pollution material, using student worksheets problem based learning whit the practicum method for class VII of junior high school 03 Suruh on environmental pollution material. This research is a research and development (R&D) research adapted from Sugiyono. This research is limited to eight stages, namely potential and problems, data collection, product design, design validation, design improvements, product trial, design revision, and usage trial. The research instrument was used as a questionnaire with a four-point response format from a Likert scale to determine the feasibility and practicality of the test instrument in the form of pre-test and post-test questions, as well as documentation. The results showed that the student worksheet PBL environmental pollution material could be used with a feasibility level of 93.57%, which means it can be used with revisions from the validator's input. The percentage of practicality by the teacher is 93.43%, and by students in the open class, 91.48%, which means it is efficient. The results of using the student worksheet PBL have a significant effect and effective influence on student learning outcomes, as evidenced by the value of Sig. < 0.005 is 0.000 and the results of the comparison of t count > t table are 11.528 > 2.037.

**Keywords:** development; student worksheet; PBL; practicum; IPA.

### **Introduction**

Education is a central role that is needed in order to improve the quality of human resources (HR). Later, it is expected that humans will have disciplined, intelligent, skilled, advanced, devoted, faithful, virtuous characters, professional responsibility, and physically and mentally healthy (Insani et al., 2018). In the field of education, there are students, and also educators or commonly referred to as teachers. Teachers are the most crucial component in creating the maximum education quality (Arifa & Prayitno, 2019). The creation of quality education can be obtained with the creativity of a teacher, especially science teachers. They must always show their creativity so that students can receive learning quickly (Arviansyah & Harijanto, 2016).

In its delivery, facilities are needed in the form of learning models and learning tools that must be appropriate (Rahayu et al., 2012). The science learning process so far is still using

conventional methods, such as lectures, and the results obtained are less than optimal. With these problems, it can be seen that efforts can be made by changing the learning model applied in the science learning process. The learning model that can be used to solve these problems is the problem-based learning (PBL) model (Wirata, 2018). The problem-based learning model is learning that helps students to be able to process the information in their minds which will later be able to find their own solutions to the problems they encounter. Problems are usually related to everyday life (Rochimah, 2015).

The delivery is carried out through several stages, namely (1) student orientation to students, (2) organizing students to learn, (3) guiding investigations individually or in groups, (4) developing and presenting work, and (5) being able to analyze and evaluate the process in solving the problem (Wirata, 2018). In science learning, there are several methods, one of which is the practicum method. The practicum method is a learning method in order to make students better understand learning theory and practice (Nisa, 2017). The practicum method can make students during learning more active and can learn directly. Besides that, the learning process will also become more meaningful and lively (Hayati dkk., 2019). In learning action using the practicum method, one of the things that support is the use of learning tools in the form of student worksheets (LKPD). LKPD can also be used as a guide for students in carrying out learning and to make students more active (Munandar et al., 2015). One of the most appropriate science learning materials using a problem-based learning model is environmental pollution. Environmental pollution material is a natural (concrete) learning material. This means this material is found in students' daily lives (Saenab, 2018). Based on the explanation above, the authors are interested in conducting a research entitled "Development of Student Worksheets (LKPD) Problem Based Learning (PBL) with Practicum Method for Class VII of Junior High School 03 Suruh on Environmental Pollution Material".

This research aims to determine: The feasibility of student worksheets (LKPD) problem-based learning (PBL) with the practicum method for class VII of Junior High School 03 Suruh on environmental pollution material, the practicality of student worksheets (LKPD) problem-based learning (PBL) with practicum method for class VII of Junior High School 03 Suruh on environmental pollution material, the results of using student worksheets (LKPD) problem-based learning (PBL) with the practicum method for class VII of Junior High School 03 Suruh on environmental pollution material.

## **Method**

This research was conducted at Junior High School 03 Suruh class VII. This research is a research and development (R&D) research adapted from Sugiyono. This research is limited to eight stages, namely 1) Potential and problems. 2) Data collection. 3) Product design. 4) Design validation. 5) Design improvements. 6) Product trial. 7) Design revision. 8) Usage trial. The data collection technique was carried out through research instruments used in the form of a questionnaire with a four-point response format from a Likert scale to determine the feasibility and practicality. During the field trial, the researcher used the One Group Pre-test-Post-test research design from Sugiyono (2012). The population in this study were all students of class VII D SMP Negeri 03 Suruh. The sample used in the limited trial phase or a limited group of 6 students of class VII D SMP Negeri 03 Suruh and the sample in the use trial or open class were 33 students of class VII D SMP Negeri 03 Suruh.

## Results and Discussion

A feasibility test is carried out in order to find out whether the LKPD PBL IPA is feasible to be used in the future. This feasibility test was conducted by two validators/experts, namely Mrs. Anggun Zuhaida, M. Pd. and Mrs. Fenny Widiyanti, M. Pd. The assessment is carried out after the validator has reviewed the LKPD PBL IPA environmental pollution material that has been developed. The data obtained is a questionnaire assessment through a Likert scale and additional evaluations in the form of suggestions and input from the validator.

Table 1. Results of the Recapitulation of the Feasibility Questionnaire Data for LKPD PBL IPA by Expert Lecturers

Aspek Penilaian	V1	V2	$\sum V$	Average Score	Percentage	Eligibility Criteria
Media Aspect	39	35	74	3,7	92,50%	Very Worth it
Content Aspect	55	51	106	3,77	94,64%	Very Worth it
Overall Rating			180	3,73	93,57%	Very Worth it

The following is a diagram of the feasibility results of the PBL IPA LKPD.

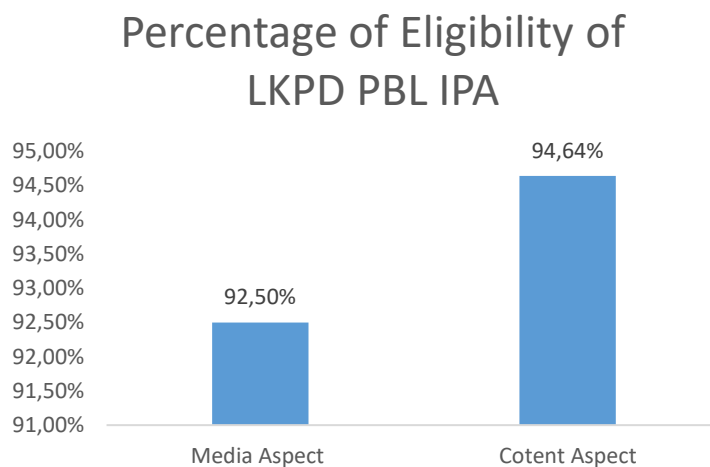


Figure 1. Diagram of The Feasibility Results of The PBL IPA LKPD

From the data obtained, the percentage in the media aspect is 92.5%, and from the content aspect, it is 94.64%. From the overall percentage of 93.57%, it can be concluded that the LKPD PBL IPA is very feasible and can be used with revisions that have been given by the validator/expert.

This practicality test is carried out in order to find out whether the PBL IPA LKPD is practical if it is used in learning. This practicality test was carried out by a science teacher at Junior High School 03 Suruh, Mrs. Ana Mariana, S. Pd., M. Pd.

Table 2. Results of Questionnaire Recapitulation to Know the Practicality of PBL LKPD by Teachers

Assessment Aspects	P1	Average Score	Percentage	Criteria Practicality
Usefulness	18	3,6	90%	Very practical
Convenience	31	3,87	96,87%	Very practical
Overall Rating	49	3,73	93,43%	Very practical

Figure Diagram of the Practicality Response Questionnaire of LKPD PBL IPA by the teacher can be seen in the image below as follows:

Percentage of Practicality of LKPD PBL IPA by Teachers

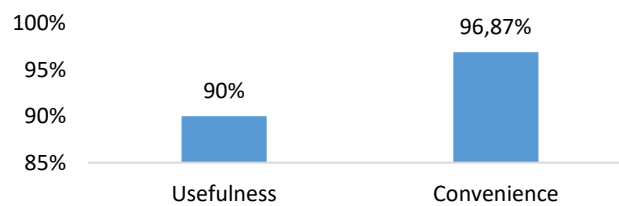


Figure 2. Diagram of The Practicality Response Questionnaire of LKPD PBL IPA By The Teacher

The response from the teacher regarding the student worksheet (LKPD) problem-based learning (PBL) can be concluded that it is very practical and there is no revision. Here there are no criticisms or suggestions as well as input on the problem-based learning (PBL) student worksheets (LKPD) that the author made. The percentage results of the usefulness aspect are 90%, the convenience aspect is 96.87%, and the overall percentage is 93.43%.

A practicality test by students is carried out in order to know the level of practicality of LKPD PBL IPA students. An early practicality test was carried out by students in an open class trial involving 33 students. Here are the results of the practicality test as follows:

Table 3. Results of Data Recapitulation of the Practicality Questionnaire of LKPD PBL IPA by Students

Assessment Aspects	P1	Average Score	Percentage	Criteria Practicality
Usefulness	712	3,59	89,89%	Very practical
Convenience	365	3,68	92,17%	Very practical
Overall Rating	2.077	3,63	91,03%	Very practical

Figure Diagram of the Practicality Response Questionnaire of LKPD PBL IPA by Students

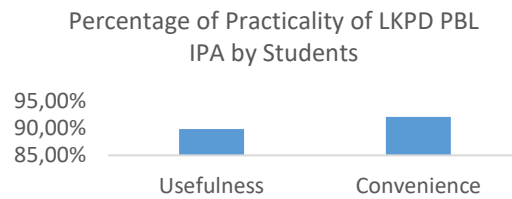


Figure 3. Diagram of the Practicality Response Questionnaire of LKPD PBL IPA by Students

Responses from students regarding student worksheets (LKPD) problem-based learning (PBL) can be concluded that the percentage results of the usefulness aspect are 89.89%, the convenience aspect is 92.17%, and the overall percentage is 91.03%. Very practical and no revision.

The results of using LKPD PBL IPA can be seen through the pre-test and post-test scores. The following are the results of the pre-test and post-test scores as follows:

Table 4. Results of The Pre-test and Post-test Scores

Pre-test		Post-test	
Value	Frequency	Value	Frequency
40	1	50	1
50	4	60	2
60	8	70	3
70	13	80	15
80	5	90	7
90	2	100	5
Total	33	Total	33

After the pre-test and post-test value data were obtained, the researcher carried out the following test steps, namely:

The normality test was carried out using the Kolmogorov-Smirnov test with the help of the SPSS 22.0 application for Windows. To find out whether the data is normal or not by means of Sig. > 0.05, then the data is normal, and if Sig. < 0.05, then the data is not normal.

Table 5. Results of the Open Class Pre-test and Post-test Normality Test

One-Sample Kolmogorov-Smirnov Test		
Unstandardized Residual		
N		33
Normal Parameters <sup>b</sup>	Mean	.0000000
	Std. Deviation	7.04202597
Most Extreme Differences	Absolute	.140
	Positive	.102
	Negative	-.140
Test Statistic		.140
Asymp. Sig. (2-tailed)		.098 <sup>c</sup>

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.

Based on the data in Table 6, it is known that the results of the normality test in the limited group are normally distributed because of Sig. > 0.05 which is 0.098.

The homogeneity test was carried out to determine whether the data obtained were homogeneous or not. The data is supposedly homogeneous if the value of Sig. Based on Mean > 0.05 and if the value of Sig. Based on a Mean < 0.05, it is shown that the data is not homogeneous. The following are the results of the homogeneity test.

Table 6. Results of the Open Class Pre-test and Post-test Homogeneity Test

		Test of Homogeneity of Variance			
		Levene			
		Statistic	df1	df2	Sig.
Student Learning Outcomes	Based on Mean	.040	1	64	.842
	Based on Median	.021	1	64	.886
	Based on Median and with adjusted df	.021	1	63.796	.886
	Based on trimmed mean	.014	1	64	.908

Based on Table 7, the results of the homogeneity test obtained the value of Sig. Based on a Mean of 0.842. Value of Sig. Based on Mean, got > 0.05, so the open class Pre-test and Posttest data are homogeneous.

The T-test was used to determine how significant the independent variable was. If the value of Sig. < 0.05, then there is a considerable effect. But if the value of Sig. > 0.05, then there is no significant effect. The results of the T-test can be seen in the following table.

Table 7. Results of T-Test Pre-test and Post-test Open Class

		Paired Samples Test							
		Paired Differences			95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
Pair		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
1	Pre-test- Post-test	-15.152	7.550	1.314	-17.829	-12.474	11.528	32	.000

Based on Table 7, it can be concluded that the use of LKPD PBL IPA environmental pollution material has a significant influence on student learning outcomes, as evidenced by the results of Sig.  $<0.05$ , which is 0.000. The calculated t value obtained is 11.528, while the t table value is 2.037. If the two are compared, then  $t_{count} > t_{table}$  that is  $11.528 > 2.037$ . From the results of the comparison of t-count and t-table, it can be seen that there is a significant effect of the use of LKPD PBL IPA on student learning outcomes.

Based on these two criteria, it can be seen that the use of LKPD PBL IPA environmental pollution material has a significant influence on student learning outcomes. It can be concluded that the LKPD PBL IPA material environmental pollution is effective on the learning outcomes of class VII of Junior High School 03 Suruh.

## **Conclusion**

The feasibility test is carried out with expert validation involving two lecturers as expert validators. LKPD PBL The results of expert validation explained that LKPD PBL IPA environmental pollution materials got an average percentage of 93.57%, which means LKPD PBL IPA materials on environmental pollution can be used with revisions according to the input given by validator lecturers/experts.

The practicality test is carried out by giving questionnaires to teachers and students. This questionnaire involved one science teacher for class VII and 33 students for class VII D for trial use. The results of the practicality questionnaire by teachers and students stated that the LKPD PBL IPA material on environmental pollution is very practical and can be used without revision. This can be seen based on the average percentage of practicality questionnaires by teachers, 93.43%, and practicality questionnaires by students in the trial use 91.48%.

Finding out the results of the use is done by giving pre-test and post-test questions to students. This test involved 33 students of class VII D. LKPD PBL IPA environmental pollution material has a significant influence on student learning outcomes, as evidenced by the results of Sig.  $<0.05$ , which is 0.000. The calculated t value obtained is 11.528, while the t table value is 2.037. If the two are compared, then  $t_{count} > t_{table}$  that is  $11.528 > 2.037$ . From the results of the comparison of t-count and t-table, it can be seen that there is a significant effect of the use of LKPD PBL IPA on student learning outcomes. Based on these two criteria, it can be seen that the use of LKPD PBL IPA environmental pollution material has a significant influence on student learning outcomes. So it can be concluded that the LKPD PBL IPA material environmental pollution is effective on the learning outcomes of class VII of Junior High School 03 Suruh.

In an effort to improve the quality of education, it is necessary to put forward some suggestions as follows: 1) Teachers are expected to be able to use all kinds of sources that can later support the learning process. 2) For further researchers who want to develop PBL LKPD, it is hoped that the developed PBL LKPD can be presented even better. 3) For students, it is hoped that they can increase their enthusiasm for learning.

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