Jurnal
Kajian dan Pengembangan Umat
P-ISSN: 2356-413X
E-ISSN: 2715-8403
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Development of Student Worksheets Based on Project-Based Learning in IPAS (Science and Social Studies) Learning at Elementary School

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Abstract

This research is motivated by several problems, such as public school teachers rarely give project assignments or group assignments, and Student Worksheets (LKPD) used in schools are considered less interesting for students, especially in terms of visual design. The purpose of this study is to develop LKPD based on Project Based Learning (PjBL) for science learning (Integration of Science and Social Studies) in Grade IV Elementary Schools that meet the criteria of valid, practical, and effective. The method used in this study is Research and Development (R&D) with the ADDIE model consisting of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The product was validated by experts using a validity questionnaire. The practicality aspect was assessed using a questionnaire filled out by the teacher, and the effectiveness was assessed through a questionnaire filled out by the students. The results of the development of LKPD based on Project Based Learning (PjBL) showed a validity score of 81% with a very valid category. The practicality score was 94% with a very practical category. The effectiveness value was 88%, included in the very effective category. Thus, it can be concluded that LKPD based on PjBL is valid, practical, and effective and can be used by students.

Keywords: LKPD, PjBL, ADDIE

INTRODUCTION

21st-century students are required to be able to manage the knowledge gained through the process of analysis, evaluation, and creation of learning activities. Modern education emphasizes increasing students' capacity to think critically, innovate, and collaborate, as a form of readiness to face global challenges in the future. Fitri et al. (2020) stated that the main skills of the 21st century include: (1) communication, (2) collaboration, (3) critical thinking and problem-solving, and (4) creativity and innovation. Thus, students are expected to be able to manage information to generate new ideas, form constructive mindsets, convey knowledge effectively, and collaborate with peers in developing their competencies. One effort to realize active learning is through the use of Student Worksheets (LKPD) as teaching materials. LKPD generally presents easy-to-understand instructions, concise materials, guided discussions, and questions designed to stimulate active student involvement. In the context of learning, LKPD acts as a work guide that helps students understand concepts and complete tasks according to Basic Competencies (KD). Therefore, compiling interesting and contextual LKPD is very important to support a meaningful learning process.

In addition to teaching media, learning strategies are also a determining factor in the success of the learning process. One approach that is in accordance with the Merdeka Curriculum is the Project-Based Learning (PjBL) model. This model encourages active student involvement through the completion of real projects within a certain period of time-related to contextual problem solving. With the implementation of PjBL, it is hoped that a collaborative learning process can be created that stimulates students' intellectual growth, creativity, and conceptual abilities (Putri & Ardi, 2023). According to the Ministry of Education and Culture (Kemendikbud, 2019), IPAS (Natural and Social Sciences) learning aims to develop students' social and critical thinking skills through integration between natural sciences and social sciences. The main objective of IPAS learning is to broaden students' insights into the surrounding environment and provide conceptual provisions that can be applied in real life. Therefore, IPAS learning strategies need to be designed efficiently, in-depth, and contextually.

However, the results of observations and interviews with grade IV teachers of SDN 09 West Pasaman Regency showed several obstacles in the implementation of learning, especially related to the use of LKPD. Teachers stated that learning was rarely accompanied by collaborative projects or assignments. In addition, the LKPD used was considered less interesting, especially in terms of monotonous and unvaried visual appearance, thus reducing student interest and motivation. Interesting visual elements are very important to increase student attention and involvement in learning. In addition, the questions in the LKPD are also less challenging and unable to encourage in-depth exploration of student understanding. These problems underlie the need to develop a Project-Based Learning learning model that is integrated into the LKPD to improve student understanding actively and in-depth. The PjBL model is a constructivist learning approach that emphasizes exploration, research, and reflection on real problems. According to Thomas (2000), Project-Based Learning is a learning model that uses projects as a medium to structure learning, encourage active student involvement, and integrate cross-subject knowledge in relevant contexts. In addition, PjBL provides opportunities for students to construct their knowledge through authentic and meaningful investigative processes.

Furthermore, Krajcik and Blumenfeld (2006) explained that PjBL facilitates learning by encouraging students to ask questions, investigate, collect data, develop products or solutions, and present them. This approach fosters a sense of responsibility and independence in learning while improving high-level thinking skills. Thus, the development of LKPD based on Project-Based Learning is expected to provide a significant contribution to improving students' conceptual

understanding, active involvement, and critical and collaborative thinking skills, especially in science subjects.

RESEARCH METHODS

This study uses the Research and Development (R&D) method, which is a research method that aims to produce certain products and test their effectiveness. According to Sugiyono (2021), research and development is a method used to produce certain products and test the feasibility and effectiveness of these products in the world of education. This approach allows researchers not only to stop searching for data, but also involves the process of designing, developing, and evaluating learning products. Furthermore, Borg and Gall (2003) explain that R&D is a process used to develop and validate educational products through systematic stages. The main principles of the R&D approach include:

1. Needs analysis and problem identification,
2. Product development design,
3. Product trials (both limited and broad),
4. Product revision based on trial results, and
5. Implementation of the product into a real context.

In the context of this research, the product developed is the Student Worksheet (LKPD) for the subject of Social Studies for grade IV Elementary School, which is compiled based on the approach of project-based Learning (PjBL) to increase student involvement and understanding of the learning material. The development model used refers to the ADDIE model, which was first developed by Dick and Carey and has been widely adopted in the development of learning tools. This model consists of five stages, namely:

1. Analysis (analysis of student needs and characteristics),
2. Design (designing LKPD based on PjBL),
3. Development (development of LKPD visually and in terms of content),
4. Implementation (application of LKPD in classroom learning activities), and
5. Evaluation (assessment of the effectiveness and quality of LKPD through trials and reflection).

Safitri, (2022; Branch, (2009) Through the application of the ADDIE model, the LKPD development process is carried out systematically and continuously by involving teachers as the main partners in product development and validation. Each stage is carried out to ensure that the products produced are relevant, suitable for use, and effective in improving the quality of social studies learning in elementary schools.

RESULTS AND DISCUSSION

This study aims to develop Student Worksheets (LKPD) based on Project-Based Learning (PjBL) in the subject of Social Studies for grade IV elementary school and to test their validity, practicality, and effectiveness. The results of the study are presented based on three main aspects, namely validity, practicality, and effectiveness of the developed product.

1. Validity of LKPD

   The validation results were carried out by two material experts and one media expert. The validation instrument includes aspects of content feasibility, language, presentation, and graphics. The average score of the validation results shows that the LKPD developed is included in the "very valid" category with an average value of 87.5%. Material experts gave a high assessment of the suitability of the LKPD content with basic competency indicators and relevance to the Project-Based Learning approach. Meanwhile, media experts assessed that the visual appearance of the LKPD was attractive, interactive, and followed the characteristics of elementary school students. These results are in line with the findings of Rahmawati & Suparman (2020) which state that the validity of a teaching tool can be seen from the suitability of the content with learning objectives and student characteristics. The involvement of experts in the validation process is very important to ensure that the products developed are in accordance with the learning needs in the field (Khoiriah & Zulmuqim, 2021).

2. Practicality of LKPD

   Practicality was tested through a limited trial on teachers and grade IV elementary school students. Teachers assessed the ease of use, clarity of instructions, and the suitability of the LKPD content to the context of classroom learning. The results of the practicality questionnaire showed that LKPD was classified as "practical" with an average score of 85%. Students also responded positively to the use of LKPD. They felt helped in understanding the material because the project activity instructions were arranged systematically, and the visual appearance of LKPD encouraged their motivation to complete tasks actively. These results are supported by research by Arifin & Yunita (2021) which states that practical learning media are media that are easy for teachers to use and can increase student involvement in the learning process. Practical LKPD will encourage teachers to use it more often in the learning process (Khoiriah & Zulmuqim, 2021).

3. Effectiveness of LKPD

   The effectiveness of LKPD was tested by measuring student learning outcomes before and after using PjBL-based LKPD. The pretest results showed an average score of 63.2, while the average posttest score increased to 82.6. Based on these results, there was a significant increase in students' understanding of the social studies material after using the developed LKPD. In addition, during the implementation of the project, students showed an increase in collaboration, communication, and problem-solving skills. Students were able to complete group projects enthusiastically and responsibly. This shows that the Project-Based Learning approach is effective in improving 21st-century skills. Research by Nugroho & Hidayati (2021) also shows that the application of project-based LKPD can improve students' learning outcomes and critical thinking skills. The effectiveness of learning media is not only measured by cognitive improvements but also by students' active involvement in the learning process (Khoiriah & Zulmuqim, 2021). The data sources in this study were obtained from expert validation questionnaires, teacher practicality questionnaires, student responses to PjBL-based Science LKPD, and the results of Class IV student tests. The data collected are as follows:

4. Media Validation

   Media validation was conducted using the following formula:

$$\text{Validity Score} = \frac{\text{Total Score Obtained}}{\text{Maximum Score}} \times 100\%$$

Table: Media Validity Levels and Revisions

No	Percentage	Criteria
1	0-20%	Not Valid
2	21-40%	Less Valid
3	41-60%	Fairly Valid
4	61-80%	Valid
5	81-100%	Very Valid

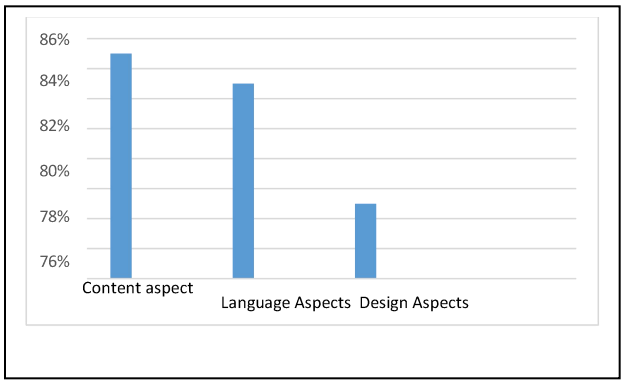
(Source: Kebijakan & Merdeka, 2023)

The overall results of the PjBL-based LKPD validation are as follows:

Table: Overall Validation of PjBL-Based LKPD

No	**Aspek**	**Average Score**	**Category**
1	Content	85	Very valid
2	Language	83	Very valid
3	Design	75	Valid
Average		81%	Very Valid

Based on the data listed in the table above, it can be concluded that the average value of the PjBL-based IPAS LKPD developed by the researcher reached 81% (Very Valid), which is included in the very valid category.



5. Media Practicality

The practicality assessment of the media is carried out using the following formula:

$$P = \frac{R}{SM} \times 100\%$$

Description:

P = Practicality Score

R = Score Obtained

SM = Maximum Score

The following is the table of criteria for assessing the practicality of the media.

Table. Product Practicality Categories :

No	Achievement Level	Category
1	81-100	Very Practical
2	61-80	Practical
3	41-60	Quite practical
4	21-40	Not practical
5	0-20	Not Practical

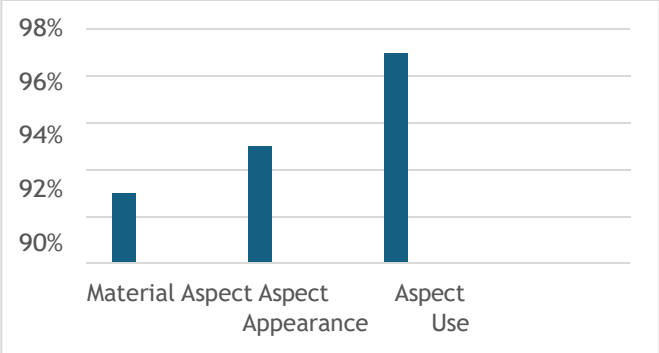
Source (Putri & Ardi, 2023)

The overall results of the practicality value of the PjBL-based LKPD are as follows:

Table 4.8 Overall Results of the Practicality of the LKPD

No	Aspect	Average	Category
1	Material	91	Very Practical
2	Appearance	93	Very Practical
3	Use	97	Very Practical
4	Average	93,6%	Very Practical

Looking at the results listed in the table above, it can be concluded that the results of the overall practicality of the PjBL-based IPAS LKPD are 93.6%. Rounded to 94%. Thus, this shows that the LKPD developed by the researcher is included in the very practical category.



6. Student Effectiveness

The effectiveness of PjBL-based LKPD is evaluated through the level of student success as seen from student questionnaires, student activity results, and learning results of grade IV student tests using the formula.

$$P = \frac{B}{C} \times 100\%$$

Description:

D = Effectiveness Value

B = Amount Obtained

C = Maximum Amount

Table. Effectiveness Category

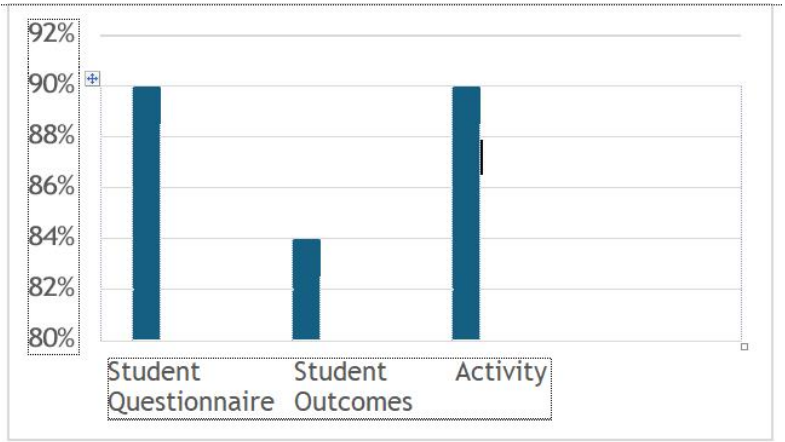
No	Percentage	Criteria
1	0-20%	Ineffective
2	21-40%	Less Effective
3	41-60%	Quite Effective
4	61-80%	Effective
5	81-100%	Very Effective

Source (Suryani, 2023)

Table. Overall Effectiveness Questionnaire

No	Assessment Aspects	Average	Category
1	Student Effectiveness Questionnaire	90	Very Effective
2	Student Test Results	84	Very Effective
3	Student Activity Questionnaire	90	Very Effective
	Average	88%	Very Effective

Based on the data in the table above, it can be seen that the overall effectiveness value of the PjBL-based IPAS LKPD reached 88%, which is included in the very effective category.



CONCLUSION

Based on the results of the research on the development of PjBL-based LKPD in science learning for Elementary School Grade IV, it can be concluded that the validity results of PjBL-based LKPD assessed from the aspects of content, language, and design obtained an overall score of 81% which is included in the Very Valid category. The results of practicality assessed from the aspects of appearance, content, and use of learning media obtained an overall score of 94% which is included in the Very Practical category. In addition, the effectiveness score measured through student activities, student response questionnaires, and the results of learning tests for Grade IV students reached 88% which is included in the Very Effective category. Based on the conclusions above, several suggestions put forward for further research are the need for continuous improvement in the development of PjBL-based LKPD with a focus on efforts to maintain and increase its practicality in order to provide an optimal learning experience. Furthermore, the

integration of PjBL-based LKPD in learning activities is encouraged to increase student involvement and understanding, thereby fostering a dynamic and effective learning environment.

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