

## Liveworksheet: E-LKPD Based On Project-Based Learning On Science And Science Learning To Improve Critical Thinking Skills

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Informasi Artikel	Abstract
<p>E-ISSN : 3026-6874 Vol: 3 No : 3 March 2025 Page : 39-43</p> <p><b>Keywords:</b> E-LKPD, Project Based Learning IPAS Liveworksheet Critical thinking skills</p>	<p><i>The purpose of this research is to develop E-LKPD based on project-based learning assisted by live worksheet science learning to improve understanding of concepts in elementary schools and the effectiveness of E-LKPD based on project-based learning assisted by live worksheet, as well as to find out the response of teachers and students in grade V of SDN Dewi Sartika 2 Aut The implementation of E-LKPD single substance material plays a role in improving thinking skills through classroom learning. The type of research is the ADDIE model approach, (Analysis, Design, Development, Implementation, and Evaluation). The product validation test was conducted by computer science media experts, Indonesian language experts, and science material experts. The results of validation by media experts were 89.0% of the criteria were very feasible, linguists 96.0% of the requirements were very doable, and science materials experts 90.3% of the criteria were very feasible. The results of the student response questionnaire were 91.5%, the response of class teachers was 90% in the appropriate category, and the average effectiveness score of the use of E-LKPD was 89.6% of the criteria as expected. The results show that project-based learning E-LKPD using live worksheets is feasible to use in the learning process and is effective in improving the thinking skills of elementary school students.</i></p>

### Abstrak

Tujuan dari penelitian ini adalah untuk mengembangkan E-LKPD berbasis pembelajaran berbasis proyek yang dibantu dengan pembelajaran IPAS lembar kerja secara langsung untuk meningkatkan berfikir kritis di sekolah dasar dan efektivitas E-LKPD berbasis pembelajaran berbasis proyek yang dibantu dengan lembar kerja langsung, serta untuk mengetahui respon guru dan siswa kelas V SDN Panaragan 2, Implementasi E-LKPD materi substansi tunggal berperan dalam meningkatkan keterampilan berpikir melalui pembelajaran di kelas. Jenis penelitian adalah pendekatan model ADDIE, (Analysis, Design, Development, Implementation, and Evaluation). Uji validasi produk dilakukan oleh pakar media ilmu komputer, ahli bahasa Indonesia, dan ahli materi sains. Hasil validasi oleh ahli media adalah 89,0% kriteria sangat layak, ahli bahasa 96,0% persyaratan sangat layak, dan ahli bahan sains 90,3% kriteria sangat layak. Hasil kuesioner respon siswa adalah 91,5%, respon guru kelas adalah 90% pada kategori yang sesuai, dan rata-rata skor efektivitas penggunaan E-LKPD adalah 89,6% dari kriteria yang diharapkan. Hasil penelitian menunjukkan bahwa E-LKPD pembelajaran berbasis proyek menggunakan lembar kerja langsung layak digunakan dalam proses pembelajaran dan efektif dalam meningkatkan kemampuan berpikir siswa sekolah dasar.

**Kata Kunci :** E-LKPD, Project Based Learning, IPAS, Liveworksheet, Kemampuan Berfikir Kritis

### INTRODUCTION

The Independent Curriculum for the Elementary School (SD) level of natural and social sciences subjects is combined into Natural and Social Sciences (IPAS) subjects, (Firtsanianta, H., & Khofifah, I., 2022). The merger of these subjects is carried out because elementary school children (Marwa, N. W. S., Usman, H., & Qodriani, B.,

2023) tend to see everything intact and integrated, the main elements are emphasized in science science learning, including science literacy is expected to increase concept understanding.

Science education at the primary school level has an important role in building the foundation of students' scientific knowledge and skills. (Andreani, D., & Gunansyah, G., 2023) Elementary school teachers' perception of science and technology subjects in the independent curriculum must be integrated in the independent curriculum of science and science subjects as needed, (Setyawati, R. C., 2023). However, various studies show that the understanding of science concepts among elementary school students is still low. This can be caused by the lack of interesting learning media and in accordance with current technological developments.

Therefore, the development of E-Worksheets for Students (E-LKPD) based on science literacy is expected to be an effective solution to improve understanding of science concepts (Jufri, A. W., 2017) like learning and learning Science (Basic Capital becomes Professional). Science education in elementary school has an important role in forming the basis of scientific understanding and critical thinking skills of students from an early age. In an effort to prepare a competent generation to face global challenges, science literacy is one of the important skills that must be developed. (Irsan, I., 2021) Science literacy is not just the mastery of scientific concepts, but also involves the ability to apply this knowledge in daily life, analyze scientific problems, and make decisions based on scientific evidence.

However, based on various studies, the understanding of science concepts in elementary school students in Indonesia is still relatively low, based on previous research (Wardhani, P. A., 2015) that self-efficacy and understanding of science concepts with natural science learning outcomes of state elementary school students in Bengkulu city are still relatively low.

Many students only memorize information without really understanding or being able to apply concepts as appropriate (Yustiqvar, M., Hadisaputra, S., & Gunawan, G., 2019). in a real context. For example, a study by (Fadhilah, 2020) shows that students' critical thinking skills in understanding science concepts are still relatively low, which has an impact on low science literacy among elementary school students, (Yusmar, F., & Fadilah, R. E. (2023), which must be measured based on the results of PISA and its causative factors.

In line with that, research by (Puspitasari et al., 2018). A scientific approach to developing the character of discipline and responsibility of elementary school students. revealed that science learning in elementary schools is still dominated by conventional approaches that do not involve students actively in the learning process, (Primayana, et al., 2019). This approach is often unable to develop students' critical thinking skills and deep understanding of science concepts.

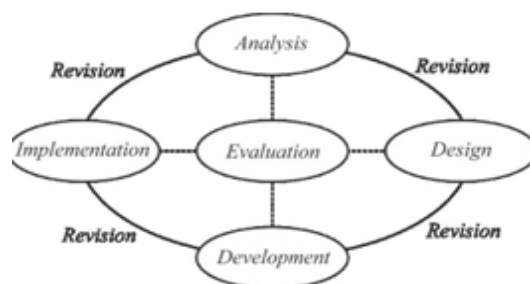
According to Rahayu (2022:75) E-LKPD has four functions, namely first, as a teaching material that can minimize the role of teachers, but more activate students. Second, as a teaching material that makes it easier for students to understand the material provided, so that students are able to achieve the indicators of a material. Third, as a simple and task-rich teaching material to practice. Fourth, it facilitates the implementation of teaching to students because E-LKPD contains materials and tasks that are systematically arranged. (Supriatna et al., 2022) revealed the advantages of E LKPD which are practical, can be accessed anytime and anywhere for free, there are various types of questions so that they can attract students' attention, files can be downloaded, can correct student answers automatically and can find out the score directly.

The disadvantage of E-LKPD is that it can only be used online. Based on the results of observations at SDN Panaragan 2, it is known that the learning carried out has not emphasized the development of science literacy-based E-LKPD that students have well. Teachers only make efforts to develop the concept of students by using printed LKPD based on teacher books. However, the LKPD used is only in the form of printed paper or in the textbook. Where the LKPD lacks motivation for students to learn because of its unattractive appearance and is not yet technology-based. In fact, technology is able to motivate and make it easier for students to be active and collaborative and fun.

## **METHOD**

The research method used in this study is Research and Development (RnD). This method was chosen because RnD is the conception and implementation of new product ideas or improvements to existing products. So the essence of R&D activities is the production of new products, or improvements to existing products, which need to be perfected (Winaryati et al., 2021:2). The RnD research model (Fitriah, N. A., Budiana, S., & Sundari, F. S., 2023) used in this study follows the flow of the ADDIE model,

namely Analysis, Design, Development Implementation and Evaluation. The following is figure 1. a chart of ADDIE's research flow.



**Figure 1. ADDIE Model Flowchart**

This study uses qualitative and quantitative data. To obtain the data, data collection techniques in the form of observation, interviews, questionnaires and documentation were used. Observation and interviews are used to dig up data about problems and needs in learning. The activity questionnaire was used to determine the eligibility of the E-LKPD. Documentation is used as evidence of the implementation of the research. The research instruments used to collect the data are in the form of observation sheets, lists of teacher interview questions, lists of student interview questions, validation sheets of media experts, language, materials, student response questionnaires and teacher response questionnaires. The data obtained was then processed using qualitative and quantitative data analysis techniques. Qualitative techniques are used to analyze qualitative data in the form of input from media experts, linguists, and material experts as material for improvement in the development of the E-LKPD made. Meanwhile, quantitative techniques are used to analyze quantitative data in the form of expert validation results, student responses, and teacher responses.

## RESULTS AND DISCUSSION

Based on the development results, it is known that E-LKPD IPAS based on science process skills on force and motion materials is developed in accordance with the stages of the ADDIE model, which consists of five stages, namely analysis, design, development, implementation and evaluation. The first stage is analysis. At this stage, a needs analysis was carried out at SDN Panaragan 2, Bogor City.

Based on needs analysis activities carried out through observation and interviews, it is known that the learning process of IPAS is more focused on the knowledge aspect only, so it pays less attention to the aspects of students' attitudes and skills. As a result, science literacy, which is an element of social science learning outcomes in the independent curriculum, cannot be achieved properly. As one of the means of developing the concept of integrated science literacy, E-LKPD uses *Liveworksheet*. The LKPD used during this time does not support the learning needs of students as a whole and maximum. The form is also not attractive and innovative so that it does not motivate students. The existence of these problems, it is necessary to develop E-LKPD IPAS based on science literacy, (Gani, R. A., Windiyani, T., Hikmah, N., & Sabila, F. H., 2024).

At the design stage, it was carried out to create an E-LKPD in accordance with the expected needs. Designed with the *Canva* application no design E-LKPD, the content of the E-LKPD material refers to learning outcomes and class IV science books as well as indicators of science process skills. After completing the design of the E-LKPD, the design is saved in PDF format which the researcher then uploads to *liveworksheets*. The uploaded PDF format is then added with interesting *liveworksheets features*. Then E-LKPD is ready to be used by students in HTML format. At this stage, the E-LKPD that has been made is then validated so that it is known whether the E-LKPD is suitable for use or not. Validation is carried out by three experts, namely media, language and material experts by providing a validity score for the E-LKPD that has been made through a validation questionnaire. The results of the validation score are then converted into a percentage to determine the feasibility of the E-LKPD. The results of expert validation can be seen in the following table.

**Table 1 Expert Validation Results**

Validator	First validation		Second validation	
	Persentase	Criterion	Persentase	Criterion
Media members	80%	Proper	88%	Highly Worthy
Linguist	88%	Highly Worthy	95%	Highly Worthy
Material expert	90%	Highly Worthy	94%	Highly Worthy
<b>Average</b>	<b>86%</b>	<b>Highly Worthy</b>	<b>92%</b>	<b>Sangat Layak</b>

The design of the E-LKPD product based on science literacy maximizes the use of the features provided by Canva such as templates, images, animations, and typefaces according to needs. In designing the validation validator of learning media, 80% with "feasible" criteria, and 88% with "very feasible" criteria to be tested to users. Furthermore, 88% of linguist validation with "very feasible" criteria and 95% with "very feasible" criteria are used to be tested to users. Meanwhile, the validation of the material resulted in 93% of the presentation of the "very feasible" criterion and the second validation received 94% with the "very feasible" criterion, the product was tested on teacher users and students.

Thus, it can be concluded that E-LKPD IPAS based on science literacy in water cycle materials can be observed in terms of media, language and materials are very suitable for use to students as seen from the average total validity of 87% in the first validation and 98% in the second validation.

After the E-LKPD was declared suitable for use, then at the implementation stage of E-LKPD, a trial was carried out on class V students of SDN Panaragan 2 with a total of 30 students. The implementation of this trial was carried out to find out the students' response to the science literacy-based E-LKPD IPAS using *Liveworsheet* so that the feasibility of the E-LKPD is known.

The trial was carried out directly teaching in the classroom using the developed E-LKPD. In addition to being tested on students, the E LKPD is also shown to teachers as educators and facilitators in the classroom with the aim of finding out the teacher's response to the science literacy-based E-LKPD IPAS so that the feasibility of the E-LKPD is known, (Mirawati, M. et.al, 2024).

The last stage is evaluation. After the trial, students and teachers were given a questionnaire containing 8 statements. Before students and teachers fill out the questionnaire, first explain how to fill out the questionnaire. The results of all students' responses were summarized to find out the average for E-LKPD. Based on the recapitulation, the average score of student response percentage was 94% with the criterion of "very feasible" so that E-LKPD was declared very feasible to use. Meanwhile, based on the teacher's response, a percentage of 98% was obtained with the criterion of "very feasible" so that the E-LKPD was also declared very feasible to be used in active and collaborative learning, (Hikmah, N., et al., 2024).

## CONCLUSION

Final conclusions obtained in the research and suggestions for improvement that are considered necessary or relevant follow-up research. The process of developing E-LKPD IPAS based on science literacy on water cycle materials uses the ADDIE model by starting at the needs analysis stage in schools by conducting observations and interviews with teachers and students as initial data. The design stage of E-LKPD IPAS science literacy assisted by *Liveworksheet*.

The validation stage of E-LKPD by media, language and material experts. The implementation stage by conducting a trial is limited to 30 students and teachers as users. The evaluation stage provides a questionnaire to students and teachers to find out the responses of students and teachers to E-LKPD IPAS based on science literacy using *Liveworksheet*.

The feasibility of E-LKPD IPAS based on science literacy is seen from the results of expert validation, student and teacher responses, E-LKPD is declared suitable for use as teaching materials for use in the next semester of learning.

Based on the recapitulation, the average score of student response percentage was 94% with the criterion of "very feasible" so that E-LKPD was declared very feasible to use. Meanwhile, based on the teacher's response, a percentage of 98% was obtained with the criterion of "very feasible". used by students and teachers as teaching materials in the water cycle in class V of Panaragan 2 Elementary School.

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