

DEVELOPMENT OF DIGITAL-BASED LKPD ON THE MATERIAL OF ENVIRONMENTAL CONSERVATION EFFORTS TO IMPROVE LEARNING OUTCOMES OF GRADE V STUDENTS

Indra Alfisah*

Universitas Widya Gama Mahakam Samarinda

*Corresponding Author, email: indra6610@gmail.com

Received: February 20 2025

Revised: March 31 2025

Accepted: April 30 2025

ABSTRACT

The purpose of the research is to develop digital LKPD based on environmental conservation material. This research is a research and development. This research uses the 4-D development model which consists of four stages, namely: define, design, development, and dissemination. The research was conducted at MIS Panca Dharma. The subjects in the study were MIS Panca Dharma fifth grade students in the 2022/2023 school year which totaled 17 students consisting of 12 female students and 5 male students. The object of research is digital-based LKPD. Techniques in research are observation, interviews, questionnaires and documentation. Based on the results of media expert validation with a percentage of 86.37% categorized as valid, the results of language expert validation with a percentage of 96.43% categorized as valid, and the results of material expert validation with a percentage of 90.9% categorized as valid. Based on the results of the pretest trial, it is known that 50% consists of 15 low students and 2 students who have very high scores. Meanwhile, the results of the posttest trial showed that 86% consisted of 16 students who had very high scores and 1 student who had low scores. Student response to digital-based LKPD is 90.9% categorized as very interesting. Based on these results, it can be concluded that digital-based LKPD on the material of environmental conservation efforts to improve the learning outcomes of fifth grade students of MIS Panca Dharma.

Keywords: *Development, LKPD, Elementary School*

Copyright © 2025 THE AUTHOR(S).
This article is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)

Introduction

Education is an effort to realize a learning process that can improve the quality of individuals. This is in line with Basri's (2019) idea that education is a process of shaping and improving the quality of human beings in all aspects. Schools provide this education to a person. Schools give parents the opportunity to learn and help them gain knowledge that they cannot learn at home. Children who go to school can gain better knowledge, understanding and experience than just staying at home.

According to Rusmiati (2017) education is an action taken by adults with responsibility and consciously. Meanwhile, according to Basri (2019), education is an effort to shape and develop the quality of human self in all its aspects. This is in accordance with the opinion of Widyaningsih & Ganing (2021) which states that education is a group of individuals who prepare a person's potential or ability in teaching, training and guidance activities in order to adapt to the environment and their role. Yati Amuntai et al, (2021) state that the most important thing in life is education. Education is not only provided at school, but also at home, community and family. Education, which can also be defined as an effort to improve and expand the knowledge, skills, and abilities of individuals, is what determines and determines their life path. Teaching materials are a collection of subject matter that is systematically organized and can be used for learning. Learner worksheets are printed educational resources that contain instructions and tasks to solve problems (Istikharah & Zulkifli, 2017) (2021).

According to Yati Amuntai et al, (2021) the most important thing in a person's life is education. Education is not only provided at school, but also at home, in the family environment. Education, which can also be defined as an effort to expand and improve one's knowledge, skills, and abilities, determines one's path in life. From the above problems, teachers must use teaching materials that can make students interested in participating in the learning process in the classroom. One of the teaching materials that can be used by teachers is student worksheets (LKPD). Student worksheets (LKPD) are part of the teaching materials used by teachers and students in teaching and learning activities, (Jamaludin, 2017). Learner worksheets (LKPD) are printed teaching materials that contain instructions and activity steps to solve a problem (Istikharah & Zulkifli, 2017). Learner worksheets (LKPD) are available in printed and non-printed versions. However, many students are not interested in following the learning process in class when printed LKPDs are used. Non-print teaching materials are all types of materials used by teachers to assist learning in the classroom (Abadi et al, 2020). Teaching materials can also be defined as a type of material that helps the learning process (Mudlofar, 2017). According to Lubis (2020) the Learner Worksheet itself plays a very important role in improving students' critical thinking skills in completing the posttests given. Likewise, in skills and problem solving abilities, through LKPD students work individually to complete the learning process so that by itself students' independent and active learning abilities grow and students' critical thinking patterns also emerge.

Students will be more interested in following the learning process by using digital-based LKPD. In the era of digital education, technology must be used more in the learning process. One way technology can answer the challenges in the current era is by using digital LKPD. This should also be applied in all schools because technology is basically designed to help students (Rahmasari, 2019). Digital media helps educators deliver subject matter more easily and interestingly. The hope is that learning becomes more interesting, so that educators are more motivated to learn (Fauzan, 2020). The digital media serves to facilitate what the teacher wants to convey to the learners. The digital media also makes the subject matter that you want to convey and display interestingly. The hope is that the existence of digital media makes learning more interesting so as to increase the motivation of educators in learning (Fauzan, 2020).

Literature Review

Learner worksheets are printed teaching materials that contain guidelines and can be used by students to develop students' abilities. LKPD is teaching material that can be used as a learning guide that requires students to be actively involved in learning (Syamsu, 2020).

Student worksheets in the teaching and learning process can have an impact on students' learning activities which are initially boring to be fun, the teaching and learning process that occurs is more interactive, and students can become more motivated to be more enthusiastic about learning (Puspita & Dewi, 2021).

Learner worksheets are sheets containing questions that direct students to understand the concepts in the material, so that students find it easier to understand important concepts in structuring. According to Diani et al, (2019), student worksheets are one of the means to help and facilitate teaching and learning activities so that effective interactions between students and teachers will be formed, so that they can increase student activities in improving learning achievement (Tur Rosidah et al., 2021). In the participant activity sheet

(LKPD) students will get a description of the material, tasks and kaihannya related to the material. Learner worksheets are part of teaching materials used by teachers and students in teaching

and learning activities, this teaching material is material that is systematically arranged in both non-print form used in learning and learning (Magdalena et al., 2020). According to Dazrullisa & Hadi (2018) Learner worksheets can also help students understand subject matter more easily, with increased success in completing tasks on worksheets. Learner worksheets can also train critical and creative thinking skills. Thus it can be concluded that LKPD is a learning resource in the form of task sheets, task implementation instructions, learning evaluations that must be done by students made in accordance with the basic competencies that must be achieved. Learner Worksheets are one of the means to facilitate teaching and learning activities so that effective interaction between students and teachers can be formed.

a. Function of Learner Worksheets (LKPD)

The functions of the student worksheet (LKPD) in the learning process according to Muhsam (2020) are as follows:

- 1) Train participants learners to determine and develop skills
- 2) Helps learners to obtain notes on the material to be learned through learner learning activities.
- 3) Helps learners to add information about the concepts learned.

b. Benefits of Learner Worksheets (LKPD)

According to Baharun et al., (2020) The benefits of using student worksheets include:

- 1) Make it easier for educators to process the learning process.
- 2) Can be used to develop process skills.
- 3) Helps educators monitor the success of students to achieve learning goals.
- 4) Helps educators direct their students to be able to find concepts through their own activities or in group work.

c. Purpose of Learner Worksheet (LKPD)

According to the purpose of the student worksheet, which is to present teaching materials, which are in accordance with the needs, there are four points that are the objectives of preparing student worksheets, including:

- 1) Presenting teaching materials that make it easy for students to interact with the material provided.
- 2) Train students' learning independence
- 3) Make it easy for educators to give assignments to students
- 4) Presenting tasks that increase students' mastery of the material provided

This and future technological advances, especially in the field of information and communication, have caused the world to narrow its scope. Interaction between one nation and another, whether intentional or not, has become very intensive. According to Galuh Mahardika & Nur Ramadhan (2021) This technological advancement has a long history when viewed backwards, there is a history that is a source of development in the field of information and communication. Meanwhile, according to Alda (2021), the word technology literally comes from the Latin "texere" which means to compile or build. The definition of technology is a way or method and processes or products resulting from the utilization of various scientific disciplines that produce value for meeting the needs and improving the quality of human life.

Based on the explanation above, it can be concluded that digital technology is an applied science developed using software and hardware. Computer-based technology is a way of producing or delivering material using microprocessor-based resources.

3. Characteristics of Computer-Based Technology Media

Computer-based technology is a way of producing or delivering material using microprocessor-based sources. According to Harahap (2018) some of the characteristics of media produced by computer-based technology (both hardware and software) are as follows:

- a. Can be used randomly, non-consequentially or linearly.
 - b. Can be used based on the wishes of students or based on the wishes of the designer or developer as planned.
 - c. Usually ideas are presented in an abstract style with words, symbols and graphics.
-

-
- d. Cognitive science principles for developing this medium.
 - e. Learning is student-oriented and involves high student interaction.

Methods (Times New Roman 12, Bold)

This research will be conducted at MIS Panca Dharma Jln Kata Jadi Lalangan Wampu District Langkat Regency. This research was conducted from January to March in the even semester of the 2022/2023 school year. The subjects in this study were MIS Panca Dharma fifth grade students in the 2022/2023 academic year, totaling 17 students consisting of 5 male students and 12 female students. While the object of research is a person, object or activity that has certain variations that have been determined by research to be studied and drawn conclusions (Sugiono, 2018). The object of this research is the development of digital-based learner worksheets (LKPD). This type of research is a type of research and development (Research and Development). Research and Development is a research method for developing and testing products that will later be developed in the world of education, there are various kinds of research and development. research models that can be used as a reference in Research and Development research (Amali et al, 2019).

The development model used in this research is the 4-D development model. This 4D development model is a development model for various types of learning media that are general in nature, which can be used to develop various types of learning media. Arkadianta (2020) says that the 4-D development model consists of four stages, namely: define, design, development, and dissemination. Researchers limit the stages in this study to the development stage. This research procedure is arranged so that its implementation is directed and systematic. The device development model used is the 4D model consisting of 4 stages of development, namely:

1. Define Stage

Yustinaningrum et al (2017) hold defining is the initial stage of the development of the 4D model, as for the purpose of the defining stage is to determine and define learning needs by analyzing the objectives and limitations of the material (Yustinaningrum et al, 2017) This activity is a beginning-end analysis, material analysis, task analysis and learning objectives.

2. Design Stage

The design stage is a stage that aims to prepare and produce the development stage that aims to produce a good final draft that has been revised based on expert input data obtained from field trials (Daian & Sri, 2017). Researchers designed digital-based lkpd products.

3. Development stage

The development stage is to produce and validate the selected learning resources (Sugiharni, 2017). This development stage aims to conduct expert validation of LKPD products developed to experts, consisting of three experts, namely material experts, linguists, media experts and class teachers. After obtaining the validation results, the researchers then made revisions based on suggestions and input from the experts

According to (Alhamid & Anufia, 2019) Data collection techniques are ways that researchers can use to collect data. The data collection techniques in this study are as follows:

1. Observation

Observation is a data collection technique that has specific characteristics when compared to other techniques (Sugiyono, 2018). Observation aims to directly observe learning activities teaching in class V of MIS Panca Dharma on the material of environmental conservation efforts.

2. Interview

Interviews are conducted by conducting questions and answers between researchers to collect information data (Retnaningrum & Umam, 2021). In this research, interviews will be conducted with fifth grade teachers at MIS Panca Dharma. The purpose of this interview is to find information about the problems that occur in grade V students at MIS Panca Dharma.

3. Questionnaire

Questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer (Sugiono, 2018).

4. Documentation

Documentation is intended to obtain data directly from the research site, documentation can be in the form of pictures, documents, and others (Sudaryono, 2018). Documentation in this study is in the form of photographs when conducting research.

Data collection instruments are tools used to measure the data to be collected (Alhamid, 2019). The instrument used in data collection is to use a validation sheet instrument that will be used to collect data (Alhamid, 2019).

No	Assessment Aspect	Indicator	Item Number
1	Content Appropriateness	<p>Suitability material with basic competencies.</p> <p>The material presented is in accordance with indicators and objectives.</p> <p>Suitability objectives learning objectives</p> <p>Material that presented simple and clear</p> <p>There is summary material that is in accordance with the learning indicators</p> <p>learning indicators</p> <p>The correctness of the material aspects.</p> <p>The material is easy to understand by learners.</p>	1, 2, 3, 4, 5, 6, 7
2.	Linguistic Appropriateness	<p>The language used is clear and not make participants confusion.</p> <p>Sentences used to explain material easy understood.</p> <p>Suitability of with Indonesian language rules that are good and correct.</p> <p>The language used is appropriate with the level of development of students' thinking.</p>	8, 9, 10, 11

Data analysis of this research instrument uses qualitative descriptive analysis techniques. The goal is to process information into data so that the characteristics of the data become easy to understand and are also useful for finding solutions to research problems. Thus, the data analyzed in this study are

the results of the expert team's validation of digital-based LKPD in grade V MIS Theme 8 "Environment of Our Friends" Subtheme 1 "Environmental Conservation Efforts", the results of the effectiveness of digital-based LKPD and the practicality of digital-based LKPD. The data analysis in this study is as follows: assessed by experts. This assessment aims to determine the feasibility of a product that has been developed. The validation sheet instrument will be assessed by linguists, material experts, media experts, and expert practitioners. The instrument grids that will be used for experts are as follows:

1. Media Expert Validation Instrument

Media expert validation instrument to obtain data in the form of assessments, opinions and suggestions related to the graphics of the teaching materials developed. The validity analysis data is obtained from the validation sheet. The digital-based LKPD validation sheet is used to obtain information about the quality of digital-based LKPD based on the validator's assessment. Validators consist of media experts, material experts, linguists and class teachers.

Analysis of the Practicality of the Developed Product

a. Analysis stage

At this stage, the researcher collects information on learning problems in the classroom. Information collection is carried out by observation, interviews, and documentation during teaching and learning activities. Interviews were conducted to find out the material that would be delivered in the classroom learning process. Documentation is used to take pictures of the situation when the learning process takes place in the classroom. Classroom observation aims to find out the teaching and learning process carried out by the teacher and the characteristics of students when participating in the learning process.

b. Design Stage

Based on the results of the analysis found during observations with interviews with teachers and strengthened by the results of the test so that ideas can emerge to develop Digital Based LKPD as a learning supplement in the classroom.

c. Development Stage

This stage is to produce products that can help motivate and supplement learning. Researchers began to pour the creative and innovative ideas that researchers have to make Digital-Based LKPD.

Result and Discussion (Times New Roman 12, Bold)

The results of the analysis carried out in this study are to produce Digital-based LKPD teaching materials on Sub-theme 3 Environmental Conservation Efforts. This research was conducted for 3 months from January to March 2023 at MIS Panca Dharma. In this study using the 4D model of defining (define), designing (design), developing (development) and disseminating (Dissemenete). The steps in this 4D model are described as follows:

a. Define Stage

Performance analysis is the first stage in research and development. This is achieved through initial analysis, final analysis, material analysis, task analysis, and learning objective analysis.

1) Initial and Final Analysis

Initial analysis is the process of identifying problems encountered when implementing the learning process. This analysis is done by direct observation. The results of the observation show that there are still several problems faced in the learning process. These problems do not yet have materials teaching materials used as class learning materials, the learning process is still inadequate.

2) Material Analysis

Material analysis is carried out to determine what materials will be used in the development product. To analyze the material, the syllabus used by Mrs. Siti Fatimah as a 5th grade teacher is used to ensure that the material used in the development product is in accordance with the syllabus. The material used in the development product is material from subtheme 3 Environmental Conservation Efforts, which is included in the syllabus.

3) Task Analysis

Task analysis is used to explain the content to be developed in digital-based LKPD. The purpose of this analysis is to determine the learning evaluation. To create digital-based LKPDs, use materials and practice questions. In addition, the tasks are adjusted to the syllabus used by the fifth grade teacher so that they include relevant questions and materials. The tasks make learners not only

gain an understanding of the material but also build critical thinking skills. In the digital LKPD developed in it, each material has a learning evaluation consisting of ten multiple choice questions.

4) Learning Objectives

Learning objectives aim to help and facilitate the teaching and learning process activities so that effective interaction between students and educators is formed, and can increase students' learning activities and achievements.

According to Novita (2019) student learning outcomes data in the form of a pretest, namely a test conducted before using the developed LKPD and a posttest conducted after using the developed LKPD. The pretest aims to see the initial understanding of students then the posttest aims to see students' understanding of the material after using the developed LKPD. LKPD is declared effective if all students reach completeness.

a. Results of Learner Response

Students' response to Digital Based LKPD on the material of environmental conservation efforts in class V Mis Panca Dharma is done by giving pretest and posttest questions to find out student learning outcomes. This stage is done to test the understanding of students, in trials conducted by students using individual trials. The results of the trial on class V Mis Panca Dharma students showed that in the initial stage a pretest question was given 20 multiple choice questions from a total of 17 students and had 15 students with a score of 50 with a low category. While the pretest learning outcomes have learning completeness with a value of 90 categorized as very high. During the learning process, teachers only use the lecture method, so the learning process in the classroom is less effective. This product is designed to help students learn more easily, so they do not feel bored during the learning process in the classroom. Researchers developed Digital-Based LKPD to improve student learning outcomes.

a. Media Expert Validation Results

Media validation was carried out by a media expert validator, namely Validation data is obtained by providing a validation sheet that contains LKPD aspects, presentation components including clarity of objectives to be achieved, media engineering aspects and visual communication aspects. In terms of the LKPD component, it was declared very valid with a percentage value of 86.37%. This is in line with the results of research conducted by Rahmi (2018).

b. Language Validation Results

In the assessment conducted to the linguist validator, namely the results of the linguist validation assessment resulted in a score of 96.43% in the valid category. This is in line with Dewi & Yuliana, (2018) who stated that the results of the assessment by linguists received a score of 89.83%.

c. Material Validation Results

In the assessment conducted by the material expert The results of the material expert validation assessment received a score of 90.9% in the valid category. Dewi & Yuliana, (2018) said that the results of language expert validation received a score of 96.11% with a very feasible category.

d. Teacher Response Results

Based on the assessment results from teacher validation, it received a score of 93.75% in the very interesting category. This is in accordance with Jannah, (2018) states that the results of the practicality of the product obtained obtained a result of 97.5% with a very practical category.

Conclusion

1. The feasibility of digital-based LKPD on the material of environmental conservation efforts is seen from the results of three validations by media experts with a feasibility percentage of 86.37% with a valid category. The results of validation by linguists with a feasibility percentage of 96.43% with a valid category, and the results of validation by material experts with a feasibility percentage of 90.9% with a valid category.

2. The effectiveness of digital-based LKPD was developed using a learning outcomes test. Based on the results of the average value on the pretest initial test value of all 17 students who have a very low level of mastery as many as 15 students with an average value of 50. Therefore, judging from the results of the final learning value on the posttest final test that the use of digital-based LKPD can improve the

learning outcomes of students as many as 16 students who have very high scores, and those who are not complete 2 students with an average value of 86. Therefore, judging from the results of the average value obtained that digital-based LKPD is included in the complete category.

References

Galuh Mahardika, M. D., & Nur Ramadhan, F. (2021). Ips Learning as a Strengtheners of Nationalism in Facing Challenges in the Era of Globalization. *Journal of Theory and Praxis of Ips Learning*, 6(2), 78-91. Harahap, N. (2018). The Use of Macromedia Flash in Mathematics Learning. 1- 9.

Magdalena, I., Sundari, T., Nurkamilah, S., Ayu Amalia, D., & Muhammadiyah Tangerang, U. (2020). Analysis of teaching materials. *Journal of Education and Social Sciences*, 2(2), 311-326. <https://ejournal.stitpn.ac.id/index.php/nusantara>

Muhsam, J. (2020). Development of Student Worksheets (Lks) Based on the Life Skills Integrated Inquiry Model for Students of Grade Iv Sd Negeri Oeba 3 Kupang. *Journal of Basic Education Flobamorata*, 1(1), 14-21.

Pikapратиwi, Pande Kadek Nopa, Wulandari, Gusti Agung Ayu, & Wiarta, W. (2022). Development of Learner Worksheets (Lkpd) Based on Tri Hita Karana in Elementary School Grade V Science Learning. *Journal of Education and Counseling*, 4(2), 406-410. <http://journal.universitaspahlawan.ac.id/index.php/jpdk/article/view/3934%0a>
<http://journal.universitaspahlawan.ac.id/index.php/jpdk/article/download/3934/2735>

Susiyanto, D. (2021). Kipin Pto as an Online Learning Digital Assessment Media Amid the Covid-19 Pandemic. *Cendekia: Journal of Science*, 1(4), 280-292. <https://doi.org/10.51878/cendekia.v1i4.576>

Syamsu, F. D. (2020). Development of Discovery Learning Oriented Learner Worksheets to Improve Students' Critical Thinking Skills. *Genta Mulia*, Xi(1), 65-79.

Tur Rosidah, C., Sulistyawati, I., Achmad Fanani, A., & Pramulia, P. (2021). Worksheet for learners (Lkpd) thematic learning based on Tik: Ppm for teachers of Hang Tuah X Sedati Elementary School. *Bernas: Journal of Community Service*, 2(3), 660-666. <https://doi.org/10.31949/jb.v2i3.1319>

Warkintin, W., & Mulyadi, Y. B. (2019). Development of Teaching Materials Based on Interactive Power Point Cd to Improve Student Learning Outcomes. *Scholaria: Journal of Education and Culture*, 9(1), 82-92. <https://doi.org/10.24246/j.js.2019.v9.i1.p82-92>

Widyaningsih, N. P. A., & Ganing, N. N. (2021). Feasibility of Comic Media Oriented with Constructivism Approach for Science of Animal Life Cycle in Elementary School. *Journal of Pedagogy and Learning*, 4(1), 91.

Yanti Stai Rakha Amuntai, H., South, K., & Stai Rakha Amuntai, S. (2021). Standards for Educators in the Indonesian National Education Standards. *Adiba: Journal Of Education*, 1(1), 61-