

INTERNATIONAL JOURNAL OF LEARNING IN SCHOOLS

IJLS

Publication details, including instructions for authors and subscription information:  
<https://nakiscience.com/index.php/ijls>

INTERNATIONAL JOURNAL OF LEARNING IN SCHOOLS

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**Development of LKPD Based on Discovery Learning Modification of Grade IV IPAS in Elementary Schools**

**Yeni Dwi Kurino<sup>a</sup>**

<sup>a</sup>Universitas Majalengka, Majalengka, Indonesia, Email: [yenidwikurin@gmail.com](mailto:yenidwikurin@gmail.com)

**Editor in Chief: Dr. Edi Supriyadi**



**To cite this article:**

Kurino, Y. D. (2026). Development of LKPD Based on Discovery Learning Modification of Grade IV IPAS in Elementary Schools. *International Journal of Learning in Schools*, 1(1), 1-12.

**To link to this article:**

<https://nakiscience.com/index.php/ijls>

**Published by:**

Nasir Al-Kutub Indonesia

Residential Street Kila Rengganis, Block I, Number 11, Labuapi, Indonesia, 83361

## Development of LKPD Based on Discovery Learning Modification of Grade IV IPAS in Elementary Schools

Yeni Dwi Kurino<sup>1</sup>

<sup>a</sup>\*Universitas Majalengka, Majalengka, Indonesia, Email: [yenidwikurin@gmail.com](mailto:yenidwikurin@gmail.com)

\*Correspondence: [yenidwikurin@gmail.com](mailto:yenidwikurin@gmail.com)

### Abstract

The purpose of this study is to outline the procedure for creating IPA Assess the quality of the LKPD. LKPD produced on the material Flower Body and its Function. This study employs the Research and Development methodology (R&D) which is used to produce certain products, namely developing LKPD. The development model used in this research is the ADDIE development model which consists of 5 stages, namely analysis, design, development, implementation and evaluation. The development involved two validators as the research subjects consisting of a material expert test validator, a design and media expert test validator, and also the target users of this product were fourth grade elementary school students. The types of data taken in this research are qualitative data and quantitative data. The instruments used in the research were questionnaires and learning outcomes tests. The research results showed an increase in students' mathematical representation abilities in the high category based on the gain test. It was seen that the score obtained was 0.8, which was in the high criteria. And the results of the analysis from the student perception questionnaire obtained a percentage of > 80% which was stated to be very positive. It can be concluded that the IPA LKPD that was developed is very good and can increase student creativity so that the LKPD is effectively used by teachers and students, especially in science and science lessons regarding the Bungan body and its functions.

### Article History

Received:

27 March 2026

Revised:

27 March 2026

Accepted:

28 March 2026

Published Online:

01 April 2026

### Keywords:

Development, LKPD, IPAS, discovery learning

## 1. Introduction

Republic of Indonesia Government Regulation Number 57 of 2021 Article 1 concerning the National Education System defines education as a conscious and systematic effort to create a learning atmosphere and learning process so that students can actively develop the potential that exists within them to have religious spirituality. strength, self-control, personality, intelligence, noble character, and the skills needed by the people, nation, and state. Education has a very important role in society's life so that it can always develop in a better direction. In an effort to realize educational goals, professional educational staff are needed to improve the quality and potential of students. Teachers as educators must always follow educational developments in accordance with current developments. Keeping up with the times, learning can be done anytime and anywhere. The use of information and communication technology in learning is carried out to increase the effectiveness of the implementation of the learning process which can improve learning outcomes and student quality (Husain, 2014); (Stošić, 2015). Therefore, with advances in technology, teachers must be creative and innovative to develop the learning process.

In the transition from the K13 curriculum to the Independent curriculum, teachers are required to be more active in mastering their pedagogical skills (Wattimena, 2018; Zulkhi et al., 2023). The current implementation of the Independent Curriculum is in line with developments in the 21st century where this century places more emphasis on technology and teachers have more freedom in developing learning materials and tools so that it can be called independent learning. The Independent Curriculum is a curriculum with diverse intracurricular learning where the content will be more optimal so that students

have sufficient time to explore concepts and strengthen competencies. In line with the explanation above, Republic of Indonesia Government Regulation Number 57 of 2021 Standards for Education Personnel regarding Minimum Criteria for Educator Competency include pedagogical competence, personality competence, social competence and professional competence. In pedagogical competence, it is explained that teachers must be creative and innovative in designing learning. Through planning the learning process using pedagogical abilities, teachers are expected to be able to form or train students to have 21st century competencies that can shape student character, then train critical, creative thinking skills, be able to communicate and collaborate. so that students are able to compete with developments in the 21st century. One of the very important competencies for a teacher to have is making teaching tools, one of which is Student Worksheets (LKPD). LKPD or student worksheets are media that can help students learn (Noprida & Soleh, 2015; Simbolon et al., 2018).

Implementing learning activities using Student Worksheets (LKPD) can increase student activity in reading, writing and encourage students to think critically about the teaching material being taught, so that students become more active and make it easier for students to absorb and understand the material presented. at LKPD. According to Hasanah et al., (2021) de Raadt, (2012) the use of LKPD will not provide satisfactory results without being accompanied by the use of learning models in the learning process. Therefore, the Student Worksheets (LKPD) that are needed are LKPD that have characteristics that are combined with certain learning models. The Discovery learning model is a learning model that actively involves students in the learning process. Learning using the Discovery Learning model provides students with the opportunity to play a more active role in the learning process, both individually and in groups through discovery activities. (Abrahamson & Kapur, 2017, Thao, Tron & Filter, 2020)

Based on observations and interviews conducted by SDN 212/IX Simpang Limo, the results showed that during the learning process the benefits of the LKPD during the activity were not visible. Learning is still focused only on books, and LKPD has not been established as a means of learning activities. Based on the results of an interview with Mrs. M as the homeroom teacher for class 4, she said that she had never used LKPD in the learning process, she only used the teacher's manual, apart from that she had never applied the learning model as a learning tool. reference in carrying out learning activities. Learning is only carried out using lecture and assignment methods.

Based on the description of the problem, the researcher is interested in conducting research that leads to one of the research models, namely the development research model which will later produce a product with the title "Development of LKPD Based on Modified Discovery Learning in Science and Technology Subjects Class IV CHAPTER I Topic C Parts of the Body of Flowers and its function in pollination, seed dispersal in elementary schools. Previous research conducted by Fidaus (2018), regarding the development of guided inquiry LKPD to improve critical thinking skills and student learning outcomes. What makes this research different is that it is based on Modified Discovery Learning in Class IV Science and Technology Subjects on the topic of flower body parts and their function in pollination, seed distribution.

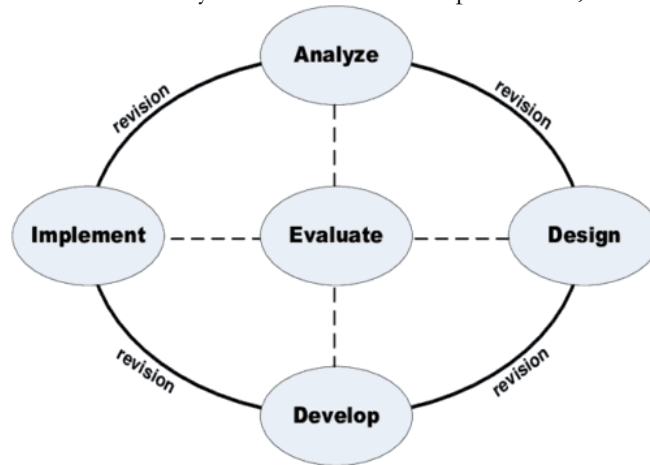
## 2. Method

This research was conducted at SDN 212/IX Simpang Limo in class IV, totaling 20 students. This research uses a development model or in English it is called Research and Development (R&D). In this development research, the model used is the ADDIE development model. The ADDIE model is an abbreviation of the five stages of the development process, namely Analysis, Design, Development, Implementation and Evaluation. In this research, the ADDIE model was chosen because it is simpler, more organized, and is widely used in creating effective learning programs and products Maydiantoro (2021) The selection of this model was based on the consideration that the ADDIE model was developed systematically. This model is designed programmatically with a systematic series of activities with the aim of solving learning problems related to learning resources that suit learning needs and characteristics.

### Research Design

Developing procedures can also help researchers to be precise in conducting their research. In this development, the ADDIE research and development model was used. According to Sholeh, (2019), "ADDIE is an abbreviation that refers to the main processes of the procedural system development process, namely: Analysis, Design, Development, Implementation and Evaluation. The product development stages are rigidly followed by the five stages described previously. These five stages will be the key to the success

of product development carried out by researchers and as a guide for researchers so that research can be directed to focus on following the flow, which will produce a product in the form of a student worksheet based on the modification of the Discovery Learning learning model in science and science subjects class IV chapter I topic C parts of the flower body and their function in pollination, seed dispersal are as follows:



Picture 1. ADDIE Model

**Research subjects**

The data sources for this development research come from various respondents and a team of experts, namely:

1. Class Teachers  
The data obtained is about needs analysis for the development of learning resources and the curriculum used by schools.
1. Education Participants  
The data obtained from the students is an analysis of the students' character education, the participants' educational practice worksheets that were developed and the results of the development of the results of the participants' character education that were developed.
2. Expert Validator Team  
The data obtained are in the form of media validity, defensive validity of teaching materials and linguistic validity of the student worksheet that has been developed.

**Data Collection**

Interviews are data collection techniques by holding meetings between interviewers and sources who exchange information (such as asking and answering), ideas through discussions on certain topics (Fadhallah, 2021; Cheng, 2014). In this research, interviews will be delivered to teachers and students as resource persons. unstructured research. (Marjohan & Afniyanti, 2018) explained that the purpose of interviews is to find out more about the data obtained from respondents.

Documentation is a data collection technique obtained from documents, archives, etc. that have a direct relationship to the problem to be researched (Powney & Watts, 2018). Documentation is used as a complement to the use of observation and interview methods so that the results are more reliable.

Observation is a data collection technique by looking directly into the field. Observations are carried out to see the needs and characteristics of students so that media creation reaches the target (Cohen, 1995).

**Data Analysis**

A set of statements created by researchers is called a questionnaire, which will then be given to respondents to choose alternative answers that have been provided (De Boer et al., 2012; Asadi et al., 2019). Researchers use closed type questionnaires, closed questionnaires are research instruments that already have answer items available. In this research, a questionnaire will also be created, namely a validation questionnaire from a team of media, material and language experts as well as a teacher and student response questionnaire. The material validation and media validation sheets are used to determine the validity of the

product being developed and are given to material expert validators, media experts who have expertise in their fields (experts), especially in the field of education or with a minimum Master's level. education. Validators can provide comments and suggestions for improving the product being developed. Teacher response questionnaires, student response questionnaires, interest questionnaires and perception questionnaires are used to see the practicality of student worksheets based on the Discovery Learning model developed. The questionnaire that researchers used was an adoption questionnaire and was then adapted from previous research.

### 3. Results and Discussion

#### Results

The Student Worksheets (LKPD) were developed based on IPAS learning using the Discovery Learning model. The LKPD provides pictures along with explanations. Students are asked to observe, experiment, sort and redraw the patterns presented on the LKPD to find out the properties, types, parts of flowers and their functions. According to (Zulkhi et al., 2024); (Ramdani et al., 2020), students can construct what they hear and see into a concept and connect the concepts they obtain from their environment with everyday life. Through this process students experience meaningful learning and the LKPD influences their learning process.

In developing LKPD, the ADDIE development model is used, namely Analysis, Design, Development, Implementation and Evaluation.

#### 1. Analysis stage

The analysis stage is the initial stage that must be carried out to develop a product, especially LKPD. In making this, the analysis stage is carried out in the form of curriculum analysis, analysis of students' needs, so that it is clear what LKPD is needed during the students' learning process. At this stage, interviews were also conducted with the class IV homeroom teacher to obtain results on students' learning needs so that they were more accurate. After identifying this gap, the research objective was set, namely to develop a science worksheet with a Discovery Learning model on the topic of flower parts and their functions to increase students' understanding. At the design stage, a prototype or initial design of the LKPD is created which is adapted to the age of class IV students, where the material presented is concrete and related to everyday life.

#### 2. Design stage

At this stage, start designing and producing a design in the form of a story board, choosing the format and design that will be created. Here's a picture of the design

#### 3. Development Stage

During the phase of development, the LKPD will be validated by several validation experts to see the feasibility of implementing it later. This validation is carried out by lecturers and expert practitioners such as class IV homeroom teachers. The validation results of expert tests and individual trials show that the Discovery Learning-based LKPD is suitable for use in learning. Based on the validation results, this LKPD is considered very valid with a score of 3.59. In terms of practicality, the response from teachers and students was also very positive with an average score of 88.9% each. In terms of effectiveness, LKPD is considered effective with a mastery level of 86.7%.

#### 4. Implementation Stage

After validation, the modified LKPD can be used and implemented in class IV as teaching material for students.

#### 5. Evaluation Stage

The results of research on the development of LKPD provide data in the form of reviews and validation results, the average percentage of test scores in terms of the knowledge aspect, as well as student responses to LKPD which were developed to increase the effectiveness of their learning. This research uses the ADDIE method which is adapted to science learning, specifically focusing on material about the parts of flowers and their function in pollination and seed dispersal. The stages of the research process include analysis, design, development, implementation and evaluation. At the analysis stage, researchers carried out needs analysis, student competency analysis, task analysis, and concept analysis related to LKPD on the topic of plant structure. The results of this analysis become the initial conditions for the development of LKPD IPAS. The analysis also revealed gaps

in learning, such as students' lack of involvement in science learning, difficulties in putting it into practice, as well as limited technology and teaching materials used by teachers.

**Discussion**

The research results found that the plant structure worksheet in science learning is suitable as an additional teaching resource that can help increase student learning effectiveness. LKPD has several advantages, including increasing learning efficiency, motivating students, being student-centered, and facilitating active learning. Apart from that, this LKPD guides students to think creatively and critically in solving problems, with the teacher acting as a facilitator. Apart from that, research (Asrial et al., 2022, ); (Nurliauwaty et al., 2017) shows that the LKPD developed received a positive response from both teachers and students, with average scores of 4.15 and 4.22 respectively. These findings indicate that Discovery Learning-based LKPD is suitable for use as a creative and innovative teaching resource that can increase student learning motivation. After the LKPD is revised based on input from the expert team, a formative evaluation is carried out to measure its effectiveness. Based on individual trials, small group trials and field tests, the LKPD was considered very good and received a positive response from students. The trial results also showed that there was an increase in students' mathematical representation abilities from no representation to sufficient representation so that in the end they achieved better representation.

Table 1

*Gain Test Results for Increasing Students' Representation Ability*

Stages	Gain Test	Information
Big group	0,8	Tall
Small group	0,7	Tall

After the development stage which includes individual trials and group tests, the next step is the implementation of Student Worksheets (LKPD) in the actual classroom environment. According to (Nugroho et al., 2017), at the implementation stage, the product being tested is applied in real life situations with authentic teaching using LKPD. This LKPD is used for class IV students.

This research is a benchmark for the use of LKPD in learning by examining the Modified Discovery Learning-based LKPD gain test in science subjects for class IV students with a focus on the topic Parts of Flowers and Their Functions: Pollination and Pollination. Seed Dispersal in Elementary Schools. The novelty of this research is to find out how LKPD based on Modified Discovery Learning in the science subject for grade IV students on the topic Parts of Flowers and Their Functions supports learning. The research aims to evaluate the results of the gain test using teaching materials using the Discovery Learning model.

Discovery Learning-based LKPD modified in the IPAS subject for class IV students with the topic Parts of Flowers and Their Functions: Pollination and Seed Dispersal is a learning tool that can simplify the teaching and learning process for both students and teachers. especially in Social Sciences. The impact for students is that they more easily understand the material explained by the teacher. This research recommends that teachers, as educators, and schools use LKPD developed in learning to assess and understand student understanding, considering the rapid development of learning in Indonesia, to facilitate the teaching and learning process in elementary schools.

**4. Conclusion**

Based on the results of research and validity development carried out through reviews of subject matter experts, learning design experts, media experts, and individual tests, the Student Worksheet (LKPD) for the science subject plant anatomy received a "very good" qualification, thereby increasing the effectiveness of the student learning process. The results of the research show an increase in students' representation abilities in the high category based on the gain test. It can be seen that the score obtained is 0.8, which is included in the high criteria. And the results of the analysis from the student perception questionnaire obtained a percentage of >80% which was stated to be very positive. It can be concluded that the science LKPD developed is very good and can increase student creativity so that this LKPD is effectively used by teachers and students, especially in science learning regarding the body of flowers and their functions. Therefore, it

can be concluded that the Student Worksheet (LKPD) on plant anatomy is the one that gets "very good" qualifications can increase the effectiveness of students' learning processes and meet the eligibility criteria for teachers to be used as teaching materials, thereby creating an active, creative and innovative learning environment.

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