



## Development of IPAS worksheet using problem-based learning to improve critical thinking

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### ABSTRACT

This research aimed to develop an instructional worksheet (LKPD) for Science and Social Studies (IPAS) based on the Problem-Based Learning (PBL) model assisted by Canva, which is valid, practical, and effective in improving elementary students' critical thinking skills. The development was motivated by students' low critical thinking abilities in IPAS and the lack of interactive teaching materials aligned with the Merdeka Curriculum. This study employed Research and Development (RnD) with a modified ADDIE model consisting of three stages: analysis, design, and development. The subjects included material experts, media experts, language experts, fourth-grade teachers, and fourth-grade students of SD IT Ummu Hafidzah, Deli Serdang. The instruments consisted of validation sheets, practicality questionnaires, and critical thinking tests. The results indicated that the LKPD was highly valid with average scores above 80% across all validation aspects. Its practicality was confirmed by positive feedback from teachers and students. Effectiveness testing through independent sample t-test and N-Gain analysis showed a significant increase in students' critical thinking skills in the experimental class. These findings demonstrate that the PBL-based LKPD assisted by Canva is sufficiently effective in enhancing critical thinking skills.

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### ABSTRAK

Penelitian ini bertujuan untuk mengembangkan Lembar Kerja Peserta Didik (LKPD) mata pelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS) berbasis model Problem Based Learning (PBL) berbantuan Canva yang valid, praktis, dan efektif dalam meningkatkan kemampuan berpikir kritis peserta didik sekolah dasar. Pengembangan dilakukan karena lemahnya daya kritis peserta didik dalam pembelajaran IPAS serta terbatasnya media ajar interaktif yang sesuai dengan karakteristik Kurikulum Merdeka. Jenis penelitian ini adalah Research and Development (RnD) dengan model ADDIE yang dimodifikasi menjadi tiga tahap, yaitu analisis, desain, dan pengembangan. Subjek penelitian terdiri dari ahli materi, ahli media, ahli bahasa, guru kelas IV, serta peserta didik kelas IV SD IT Ummu Hafidzah Deli Serdang. Instrumen yang digunakan berupa angket validasi, angket praktikalitas, serta tes kemampuan berpikir kritis. Hasil penelitian menunjukkan bahwa LKPD tergolong sangat layak dengan skor rata-rata di atas 80% pada seluruh aspek validasi. Kepraktisan LKPD juga tinggi berdasarkan tanggapan guru dan peserta didik. Uji efektivitas menggunakan uji independent sample t-test dan N-Gain menunjukkan peningkatan signifikan kemampuan berpikir kritis pada kelas eksperimen. Hasil tersebut menunjukkan bahwa LKPD berbasis PBL berbantuan Canva cukup efektif dalam meningkatkan kemampuan berpikir kritis.

**Kata Kunci:** berpikir kritis; LKPD; problem-based learning

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## INTRODUCTION

Natural and Social Sciences is an integrative subject aimed at developing students critical thinking skills through the study of natural and social phenomena. Meaningful IPAS learning requires students to analyze, evaluate, and draw logical conclusions based on contextual experiences (Novibriawan, 2023; Sapitri *et al.*, 2022). Critical thinking skills need to be cultivated from an early age so that students can ask in depth questions, construct arguments, and solve data based problems (Khovivah *et al.*, 2022; Setiawan *et al.*, 2024). Scientific based learning activities in IPAS should be directed through a systematic approach so that students not only memorize information but also understand and apply it reflectively.

The Problem Based Learning (PBL) model offers an effective learning approach to train critical thinking skills because it requires students to solve real problems through stages of scientific reasoning (Ahmadiyah *et al.*, 2023). The implementation of PBL encourages active student involvement in discussions, idea exploration, and the search for logical solutions (Alpisah *et al.*, 2023; Endaryati *et al.*, 2021). The effectiveness of this approach depends on the quality of learning materials that are systematically prepared and aligned with the principles of problem-based learning. The absence of contextual and exploratory activities in student worksheets (LKPD) will limit students' thinking space and reduce the effectiveness of IPAS learning in sustainably developing critical thinking skills (Mursalim *et al.*, 2024; Te'a *et al.*, 2025).

The global transformation marked by the acceleration of technology, digital integration, and sustainability challenges positions education as a key sector in shaping a generation capable of adapting critically and creatively (Haq *et al.*, 2023; Sutanto, 2024). 21st-century competencies, including critical thinking, creativity, communication, and collaboration, serve as the foundational framework for curriculum development and learning practices (Sudarmin & Azmin, 2024). Fulfilling these competencies requires a transformative approach through inquiry-based learning, reasoning, and contextual problem solving.

Epistemological obstacles remain prevalent in elementary science learning, particularly when students struggle to develop conceptual understanding of abstract scientific phenomena (Maisarah *et al.*, 2023). Didactic obstacles further exacerbate this condition, particularly when learning strategies do not allow active student participation in exploring, formulating questions, and drawing conclusions (Artini, 2023; Irawan *et al.*, 2023). The lack of dialogic interaction and limited hands-on experience in the learning process causes students to tend to memorize information without having a deep understanding. As a result, critical thinking skills do not develop optimally.

The development of learning that is relevant to 21st-century needs requires innovation in learning media that facilitates students' understanding through direct involvement in problem-solving. Student Worksheets (LKPD) have become an important medium for bridging the interaction between learning materials and students' thinking activities (Haq *et al.*, 2023; Lathifah *et al.*, 2021; Suwastini *et al.*, 2022). The design of LKPD, aligned with PBL principles, enables students to actively construct knowledge through the stages of problem identification, information gathering, data analysis, and the formulation of logical and systematic solutions (Agustin *et al.*, 2024; Nurhalizah *et al.*, 2023).

The PBL model provides a learning structure that supports the development of critical thinking skills by encouraging students to engage in investigative processes and real problem-solving (Hidayat *et al.*, 2024; Mulyasari *et al.*, 2022). Learning activities centered on authentic problems prompt students to ask analytical questions, evaluate information, and construct evidence based arguments. This series of processes creates a learning ecosystem that integrates cognitive, affective, and social dimensions in a balanced manner (Halimah *et al.*, 2023; Suswati, 2021). The success of implementing this model depends heavily on the quality of learning tools, particularly Student Worksheets (LKPD), which must be systematically designed to guide students through the stages of scientific thinking in a gradual, continuous manner.

The integration of technology into the development of learning tools is a strategic step toward improving the quality of learning, aligning with the characteristics of the digital generation (Amilia, 2022; Miftah & Rokhman, 2022). The use of digital technology not only enriches the visual display and interactivity of media but also plays an important role in enhancing students' accessibility, engagement, and learning motivation (Miasari *et al.*, 2022; Rosyiddin *et al.*, 2023). Canva is a digital graphic design platform that supports the creation of learning media that are attractive, communicative, and easily adaptable to learning needs (Alfatih *et al.*, 2024; Ndukang *et al.*, 2024). Canva's advantages lie in its user-friendly interface, design flexibility, and variety of visual elements relevant to children (Kurniawan *et al.*, 2024).

Contextual problems in IPAS learning in Grade IV at SD IT Ummu Hafidzah are reflected in students' low ability to evaluate information, construct arguments, and solve problems independently. The Student Worksheet (LKPD) remains oriented toward rote practice and does not accommodate higher-order thinking. The design of the learning tools does not yet reflect the stages of scientific problem solving and does not provide visual or contextual stimuli that challenge students' reasoning. The learning process is dominated by conventional material delivery, limiting opportunities for exploration and reflection on surrounding phenomena. Formative evaluation data indicate that more than half of the students are below the minimum mastery criteria, consistent with classroom observations of limited active participation, low levels of questioning, and difficulties constructing logical arguments. Teachers report that the LKPD used does not facilitate exploratory activities, does not encourage group discussion, and has not linked science concepts to real-life phenomena. These conditions underscore the urgency of developing PBL-based LKPD that are contextually and systematically designed and supported by Canva.

This study aims to analyze the validity of PBL-based IPAS Student Worksheets (LKPD) assisted by Canva for improving the critical thinking skills of Grade IV students at SD IT Ummu Hafidzah Deli Serdang, focusing on plant body parts from the perspectives of content, media, and language. Another objective is to assess the practicality of the PBL-based LKPD, supported by Canva, with respect to teacher involvement and student responses during the learning process. The study also aims to assess the effectiveness of the developed LKPD in enhancing students' critical thinking skills by measuring learning outcomes for the studied material.

## LITERATURE REVIEW

### Student Worksheet (LKPD)

Student Worksheets (LKPD) are designed as learning media that guide students to engage in exploration, critical thinking, and knowledge construction through systematic and contextual activities (Sari & Fathurrahman, 2024; Suwastini *et al.*, 2022). The principles of LKPD development are rooted in constructivist learning theory, which positions students as active subjects in constructing meaning from learning experiences (Pratiwi *et al.*, 2024). A well-structured LKPD includes work instructions, learning resources, observation or investigation activities, and guidelines for concluding, thereby strengthening independent learning processes and enhancing cognitive engagement (Kurdiati *et al.*, 2024; Widiastuti & Priantini, 2022). LKPD, developed using a scientific approach, has been shown to improve conceptual understanding, problem-solving skills, and students' learning autonomy.

The Student Worksheet (LKPD) devices used in elementary schools still prioritize memorization and closed-ended exercises, without providing space for higher-order thinking processes (Octaviani *et al.*, 2024). Activities in the LKPD tend to be procedural, minimally visualized, and not directly connected to contextual learning experiences (Dikta, 2022). The LKPD design has also not optimally utilized digital technology to support students engagement in investigating and solving real world problems (Prabandari

*et al.*, 2022; Yunitasari & Pratama, 2024). This situation indicates the need to develop PBL-based LKPD, assisted by Canva as a medium that is not only visually appealing but also capable of fostering students' scientific reasoning (Anjelina *et al.*, 2024; Citradevi, 2023). The development of this LKPD is relevant in response to the needs of IPAS learning, which requires 21st-century skills, particularly critical thinking abilities rooted in problem-based learning processes.

## **Critical thinking**

Critical thinking skills are essential cognitive abilities that reflect students' capacity to analyze information, evaluate arguments, draw conclusions, and make decisions based on logical reasoning (Septiari, 2025). The foundation for developing critical thinking is grounded in cognitive and constructivist theories, which emphasize the role of mental processes in constructing knowledge through active engagement with the learning environment (Ramadhani & Rahayu, 2024). The application of critical thinking in elementary school students should be guided by learning activities that foster the ability to explore cause-and-effect relationships, identify patterns, and formulate evidence-based arguments (Khaira *et al.*, 2023; Nursulistyo *et al.*, 2021). Strengthening this ability is integral to fostering scientific character and the capacity to solve problems reflectively and systematically.

Low critical thinking skills among elementary school students remain a persistent issue across various educational studies (Febrianti *et al.*, 2021; Naa'ifah & Suprijono, 2024). One way in which learning activities, the use of closed-ended questions, and the dominance of rote memorization have hindered the development of logical and analytical reasoning (Rahmawati, 2021). Learning designs that do not provide space for students to ask questions, engage in discussions, and formulate arguments lead to suboptimal development of critical thinking skills. This study was conducted in response to this condition by developing PBL-based IPAS Student Worksheets (LKPD) using Canva, aimed at facilitating students' scientific thinking in the context of real-world problems. Systematically designed learning tools are expected to stimulate critical thinking skills from an early stage as part of 21st-century basic competencies.

## **Problem-Based Learning (PBL)**

The PBL learning model is an approach rooted in constructivist theory, which views knowledge as actively constructed by students through direct involvement in authentic problem-solving (Ahmad *et al.*, 2025; Darwati & Purana, 2021). The PBL structure positions students as the primary learners, confronting challenging contextual problems that must be solved through critical thinking, collaboration, and investigation (Maharani *et al.*, 2024). This process involves stages of problem orientation, data collection, hypothesis development, solution testing, and concluding (Alpisah *et al.*, 2023; Putra *et al.*, 2022). Science learning using the PBL model is considered capable of fostering curiosity, enhancing conceptual understanding, and developing basic scientific skills such as observation, classification, and reasoning.

The implementation of the PBL model in elementary schools has not yet been optimal due to limitations in instructional materials that are able to guide students to follow the stages of problem based learning systematically (Santosa, 2022). The activities presented in science learning are still predominantly theoretical and provide limited opportunities for students to engage in active investigation ('Adiilah & Haryanti, 2023; Ikstanti & Yulianti, 2023). Learning tends to be teacher centered, and the problems presented are often not contextual or sufficiently challenging to stimulate students' thinking abilities (Sutrisna & Sasmita, 2022). This study was conducted to develop a PBL-based IPAS LKPD, assisted by Canva, designed to integrate problem-solving stages into structured, context-based learning activities. The

development of this instructional material aims to create more participatory science learning and to encourage students' critical thinking skills from the elementary school level.

### **The Use of the Canva Application in IPAS Learning**

The utilization of digital technology in primary education provides great opportunities to improve the effectiveness and quality of learning (Chairy *et al.*, 2023). Canva is a digital graphic design platform that offers high flexibility for developing learning media that are communicative, attractive, and easily adjusted to students' needs (Fitri & Efendi, 2024; Susanti *et al.*, 2025). The theoretical foundation of using Canva can be explained through multimedia learning theory, which emphasizes that the combination of text, images, and other visual elements can enhance students' encoding and retention of information more effectively (Deliana *et al.*, 2023; Umilatifah & Faridi, 2024). Canva-based devices can serve as supporting media, enabling teachers to present science learning materials in a more contextual manner and facilitating students' active involvement in scientific thinking.

The design of digital learning media in elementary schools has not yet been optimally directed toward developing exploratory learning activities and problem solving oriented instruction (Budiyanti & Utami, 2024; Winda *et al.*, 2024). Learning tools such as student worksheets (LKPD) still focus on passive information presentation, without providing sufficient opportunities for students to construct understanding through inquiry or visually based discussion (Mulyasari *et al.*, 2022). The use of Canva tends to be limited to aesthetic considerations rather than functioning as a medium that supports critical thinking and the systematic problem-solving stages (Anjelina *et al.*, 2024). This study was designed to develop Canva-assisted IPAS worksheets integrated with the Problem-Based Learning (PBL) model, enabling students to gain interactive, visual, and scientifically grounded problem-solving learning experiences.

## **METHODS**

This research and development (R&D) study aims to produce a Problem-Based Learning (PBL)- based IPAS student worksheet (LKPD) for elementary school students, supported by Canva, to improve their critical thinking skills. The research was conducted at SD IT Ummu Hafidzah, Deli Serdang Regency, North Sumatra Province, and was carried out from February to May 2025. The subjects of this study were fourth-grade students at SD IT Ummu Hafidzah, and the research object was the development and implementation of Canva-assisted PBL-based IPAS worksheets on the topic of plant body parts.

The development procedure in this study refers to the analyze, design, develop, implement, evaluate (ADDIE) model, which was modified into three main stages: analysis, design, and development. The analysis stage was conducted to identify students' needs through classroom observations, teacher interviews, and analysis of the instructional materials used. The information obtained served as the basis for designing the initial product draft. The design stage included structuring the LKPD, determining learning objectives, developing PBL-based activities, and designing the visual appearance using Canva. The development stage involved translating the LKPD design into a complete product, which was then validated by content experts, media experts, and classroom teachers to assess the feasibility of the content, visual presentation, and language. The product, after being revised based on expert feedback, was tested for its practicality and effectiveness through limited implementation in Grade IV at SD IT Ummu Hafidzah.

The research instruments used in this study consisted of validation sheets, response questionnaires, and a critical thinking ability test. The validation sheets were used to obtain assessments from subject matter experts, media experts, and classroom teachers regarding the feasibility of content, visual appearance, and language use in the developed LKPD. The student response questionnaires were used to evaluate the practicality of the LKPD in terms of readability, attractiveness, and ease of use. The critical thinking ability test was developed based on indicators of analysis, inference, argument evaluation, and conclusion drawing that are relevant to the topic of plant body parts. Data analysis techniques were carried out using descriptive quantitative methods by applying percentage formulas to interpret the results of validity, practicality, and product effectiveness. Validation data were presented in the form of feasibility categories, while the results of practicality questionnaires and students test achievements were interpreted based on percentage scores, which were then classified into categories ranging from very low to very high.

## **RESULTS AND DISCUSSION**

### **Analysis Stage**

The analysis stage was conducted to identify learning needs and to design the development of a PBL based IPAS LKPD assisted by Canva in accordance with the characteristics of 20 fourth grade students at SD IT Ummu Hafidzah Deli Serdang. Curriculum analysis was carried out by referring to the Merdeka Curriculum implemented at the school, which determines the learning outcomes for the topic of plant body parts. This information indicates that students need to be directed to identify the parts of plant bodies, explain their functions, and develop observation and scientific communication skills through problem based activities. Student characteristics were also analyzed based on observation results and Piaget's theory of cognitive development. Students aged 9-10 years are at the concrete operational stage; therefore, learning materials need to be presented in a contextual, visual, and structured manner to encourage the optimal development of logical and critical thinking skills.

Observations of the classroom learning process indicate that students academic abilities are heterogeneous, encompassing high, moderate, and low levels. Students tendency to learn in groups serves as an important indicator that the developed instructional materials must be able to facilitate collaboration and active interaction among group members. The results of the student needs questionnaire reinforce these findings, showing that all respondents like the IPAS subject but perceive the learning process implemented so far as not yet enjoyable. Students preferences lean toward practical and exploratory learning activities, and they report difficulties in understanding the LKPD used due to its unattractive appearance and non interactive content. These findings indicate the need to develop LKPD that are not only easy to understand but also visually engaging and supportive of problem based learning activities.

Interviews with the fourth grade teacher revealed that the LKPD used in the teaching and learning process still function primarily as supplementary materials containing questions without a clear exploratory structure. The teacher's role remains highly dominant in classroom instruction, while students active engagement in learning has not yet been fully developed. The teacher stated that instructional materials incorporating PBL syntax have never been implemented systematically. The teacher also conveyed that although the development of such teaching materials requires time and creativity, Canva technology can serve as a solution for designing effective and engaging instructional resources. The need for innovative teaching materials capable of activating student' cognitive potential forms the basis for developing PBL-

based IPAS LKPD assisted by Canva as a learning medium that is responsive to the challenges of 21st-century education.

## **Design Stage**

The design stage was carried out after the analysis activities had been completed, as a process of designing PBL based IPAS LKPD assisted by Canva that is relevant to the characteristics and needs of the students. The initial step in this stage was the preparation of a teaching module based on the topic of plant body parts. The module was developed with reference to the structure of the Merdeka Curriculum module, which consists of three main components: general information, core components, and appendices. The general information includes module identity, prior competencies, the Pancasila student profile, facilities and infrastructure, target learners, and the learning model used. The core components consist of learning outcomes, learning objectives, and the learning objective flow, while the appendix section contains material references, learning media, and assessment instruments. The preparation of this teaching module serves as the foundation for the development of the LKPD as a two way communication tool between teachers and students in understanding PBL based material integrated with critical thinking indicators.

The product design was carried out based on the results of curriculum analysis, student characteristics, and IPAS learning needs. The designed product was an LKPD in the form of a workbook that can be directly completed by students. The components of the LKPD include a front and back cover, preface, table of contents, instructions for using the LKPD, learning outcomes, learning objectives, materials, practice questions, glossary, and references. The LKPD design process was conducted using the Canva application to produce an attractive layout and support readability. The front cover contains the LKPD title, visual illustrations relevant to the IPAS material, the PBL learning model, and the target users, namely fourth-grade elementary school students. The back cover includes the author's biodata, the Merdeka Belajar logo, and the institutional logo. The preface was prepared as a form of appreciation to related parties and as an introduction to the LKPD content, while the table of contents was arranged to facilitate navigation of the material. The general information section presents learning outcomes and learning objectives aligned with the Merdeka Curriculum. The student activity orientation section describes group identity, tools and materials, an introduction to the material, and student work procedures based on the PBL syntax. The activities in the LKPD were designed to stimulate critical thinking processes and problem solving based on real contexts that are close to students experiences

The initial LKPD design that has been developed is presented to provide an early visual overview of the structure and appearance of the product to be developed. This design reflects how IPAS content, PBL syntax, and critical thinking indicators are integratively packaged within Canva based media. The initial design illustration can be seen in **Figure 1** below.



Figure 1. Initial Appearance of the LKPD  
Source: Research 2025

The next stage was the preparation of feasibility instruments to assess the validity of the product. The instruments were developed in the form of validation sheets used by subject matter experts, language experts, and media experts to evaluate the feasibility of content, visual appearance, and language use in the LKPD product. Validation was conducted before the product was tested for practicality and effectiveness. Learning assessment instruments were also validated by test instrument experts to ensure the measurability of students cognitive achievement. The practicality instruments consisted of a teacher assessment sheet and a student response questionnaire, which were designed to obtain feedback on the usability, readability, and attractiveness of the developed LKPD. The process of preparing the practicality and validity instruments referred to modified instruments from previous studies that had been empirically tested. To measure the effectiveness of the LKPD, a set of fifteen multiple choice questions was developed, referring to critical thinking indicators based on the Bloom's taxonomy framework adapted to critical thinking theory.

## Development Stage

The development stage aimed to produce a tangible product of the PBL based IPAS LKPD assisted by Canva prior to limited field testing. Validation was conducted to ensure that both the instruments and the product were appropriate for use. The validation of the critical thinking instrument indicated that several items required revision to align with the established blueprint. The purpose of the validation was to assess whether each item accurately measured the intended aspect. The instruments were developed with reference to BSNP standards and validated by experts to ensure that they met the required quality criteria.

Table 1. Results of Expert Validation of Critical Thinking Skills Instrument

No	Aspect	Score
1	Question Instructions	13
2	Material	15
3	Question Construction	16
4	Language	12
<b>Total Score</b>		<b>60</b>

Source: Research 2025

**Table 2** shows a total score of 60 out of 75, with a feasibility percentage of 80% categorized as very feasible. Product feasibility validation was conducted by subject matter, design, and language experts. The purpose was to ensure that the instrument was able to comprehensively measure product quality. The instrument was declared aligned with the established criteria after receiving input from the validators. Subject matter expert validation aimed to assess the LKPD content based on six main aspects: alignment with learning outcomes, accuracy, up to dateness, encouragement of curiosity, LKPD organization, and instructional presentation.

**Table 2.** Assessment Results from Subject Matter Experts

No	Aspect	Score
1	Alignment of materials with learning outcomes	15
2	Accuracy of Materials	21
3	Up to Date Material	10
4	Encouraging Curiosity	9
5	Preparation of LKPD	4
6	Presentation of Learning	10
<b>Total Score</b>		<b>69</b>

Sumber: Penelitian 2025

The design expert's evaluation of the PBL based IPAS LKPD assisted by Canva indicates that the product falls into the *very feasible* category, with an average percentage of 88%. The assessment was conducted based on three aspects, namely cover design, content design, and the appropriateness of the use of text, images, and illustrations. The appropriateness of visual elements obtained the highest score of 92%, while the content design aspect received the lowest score of 80%, as presented in **Table 3**.

**Table 3.** Expert Design Assessment

No	Aspect	Score
1	LKPD Cover Design	13
2	LKPD Content Design	8
3	Accuracy in the use of text, images, and illustrations	23
<b>Total Score</b>		<b>44</b>

Source: Research 2025

The language expert assessment aimed to evaluate the quality and feasibility of the PBL based IPAS LKPD assisted by Canva from a linguistic perspective. Based on **Table 4**, the instrument was evaluated across five main aspects: clarity, communication and interactivity, adherence to language conventions, use of symbols/terms/icons, and suitability to students developmental levels. The validation results indicate an average score of 82%, categorized as *very feasible*. This finding suggests that the product is appropriate for use in the learning process.

**Table 4.** Language Expert Validation Results

No	Aspect	Score
1	Straightforward	9
2	Communicative and Informative	8
3	Language Rules	8

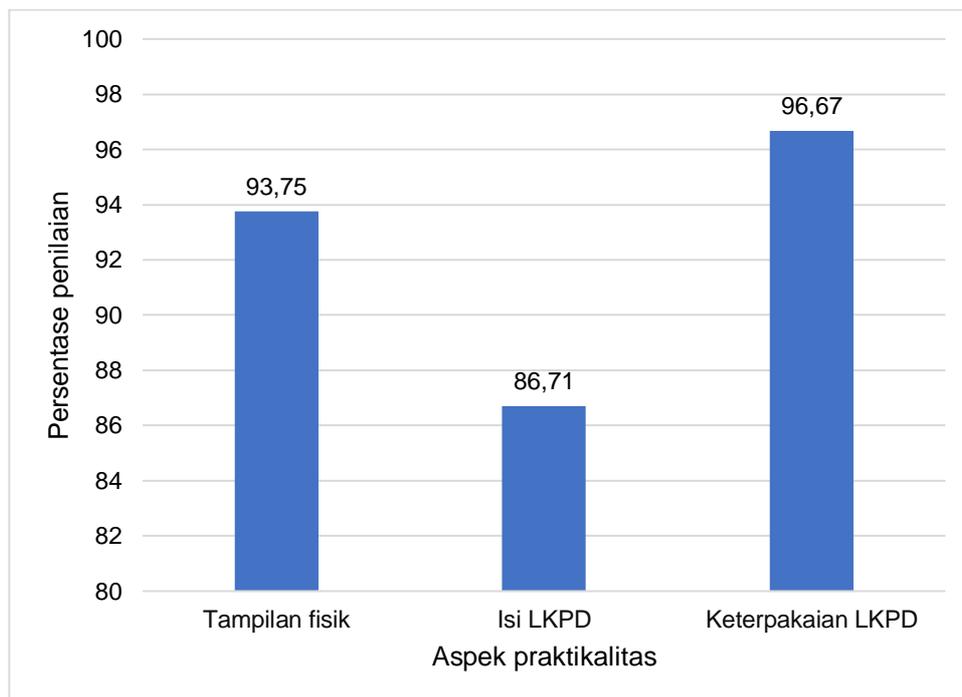
4	Development of Students	8
<b>Total Score</b>		<b>41</b>

*Source: Research 2025*

The average percentages for each aspect are presented in **Table 4**. It can be observed that the aspect with the highest achievement is clarity at 90%, indicating that sentence structure and the effectiveness of message delivery in the LKPD are very good. In contrast, the other four aspects each obtained the same percentage of 80%, suggesting that there is still room for improvement, particularly in terms of readability, consistency in language use, and the alignment of the material with students developmental levels.

### Implementation Stage

The implementation of the practicality test involving students was conducted to assess the extent to which the PBL based IPAS LKPD assisted by Canva could be directly used in the learning process in grade IV at SD IT Ummu Hafidzah The practicality assessment focused on aspects of ease of use, clarity of instructions, attractiveness of the design, and students engagement in completing the provided activities. Based on the results of the small group trial, positive responses were obtained from the majority of students, indicating that the LKPD was considered easy to use, visually appealing, and capable of encouraging active participation in learning. These findings indicate that the product has met the required practicality indicators for thematic IPAS learning with a problem based approach. The visualization of the results of the students' practicality test on the use of the LKPD is presented in **Figure 2**.



**Figure 2.** Results of the Practicality Test of LKPD Use  
*Source: Research 2025*

The practicality assessment conducted by teachers aimed to determine the extent to which the PBL based IPAS LKPD assisted by Canva could be practically applied in the learning process. The assessment was carried out by two teachers, namely the Grade IV teacher and the Grade VA teacher, based on four aspects: feasibility, language, content, and media. The results showed that the Grade IV teacher gave a total score of 66 with a percentage of 88%, while the Grade VA teacher gave a score of 65 with a

percentage of 86.67%. The average percentage obtained from both teachers was 87.33%, which falls into the very practical category. The highest achievement was found in the media aspect, with a maximum score of 20 from both teachers, indicating that the visual appearance and ease of use of the media in the LKPD received very positive responses from direct users in the classroom. Further details are presented in **Table 5**.

**Tabel 5.** Hasil Penilaian oleh Guru

Assessment Aspect	Teacher Grade IV	Teacher Class VA
Feasibility	19	20
Linguistics	10	9
Material	17	16
Media	20	20
<b>Total</b>	<b>66</b>	<b>65</b>

*Source: Research 2025*

### Evaluation Stage

The effectiveness of the PBL-based IPAS LKPD was evaluated through several stages of statistical analysis, including normality, homogeneity, hypothesis, and N-Gain tests. The normality test using Kolmogorov-Smirnov and Shapiro-Wilk indicated that the pretest and posttest data in both the experimental and control classes were normally distributed, as the significance values were greater than 0.05. These results demonstrate that all data from the experimental and control classes met the assumption of normal distribution. Furthermore, the homogeneity test results showed that the variances between the two groups for both the pretest and posttest data were homogeneous, with significance values of 0.173 and 0.880, respectively, which exceeded 0.05.

The results of the homogeneity test confirm that the variances of the data from both groups do not differ significantly, indicating that the data are suitable for further analysis using an independent samples *t*-test. The hypothesis test results indicate a significant difference between the posttest scores of the experimental and control classes. A significance value of  $0.000 < 0.05$  indicates that the use of PBL-based LKPD has a positive effect on improving students' critical thinking skills.

**Table 6.** Summary of Effectiveness Results

Class	Mean	Std. Deviation
Experiment	.5750	.31859
Control	.2699	.40044

*Source: Research 2025*

Based on the results of the N-Gain test presented in **Table 6**, the experimental class achieved an average gain of 0.5750 or 57.5%, which is categorized as a moderate level of improvement. In contrast, the control class achieved a gain of only 0.2699 (26.9%), placing it in the low-improvement category.

### Discussion

The findings of this study indicate that the PBL-based IPAS LKPD, when supported by Canva, is highly feasible for learning. This is demonstrated by validation results from material, design, and language experts, which showed average percentages above 80%, indicating that the product meets substantial

and technical validity criteria. These findings are supported by previous studies indicating that expert-validated instructional development products ensure content feasibility, presentation, language use, and graphical quality (Agustin *et al.*, 2024). Other studies have shown that the use of the PBL model in LKPD development contributes to aligning content with learning outcomes and students' needs (Ahmadiyah *et al.*, 2023). Validation from language and design experts also plays an important role in ensuring that learning media are communicative, interactive, and easy to use (Anjelina *et al.*, 2024). The feasibility criteria of an ideal development product must undergo expert instrument validation to guarantee its quality. The successful validation achieved in this study indicates that the developed LKPD has met all standard quality criteria for instructional material development.

The evaluation of the practicality of the LKPD indicates that the learning media have a high level of readability, ease of use, and visual appeal, enabling it to facilitate students' exploratory activities independently. The results of the practicality test based on teachers and students responses are consistent with findings showing that the implementation of the PBL model can increase students activeness and engagement in completing learning tasks (Putra *et al.*, 2022). The integration of attractive visual elements in the LKPD has been shown to accelerate students' understanding of the material and reduce learning boredom, as reported in previous studies (Miasari *et al.*, 2022). The design of structured problem based activities has also been shown to significantly improve operational ease and classroom interaction (Rahmawati, 2021). In addition, research on the use of digital technology in learning media confirms that the application of graphic design tools can strengthen the practicality aspect while encouraging students creativity in solving problems (Dikta, 2022). Comparisons with instructional media practicality standards discussed in previous studies further reinforce that the developed LKPD has optimal practicality value to support science learning at the elementary school level.

The improvement of critical thinking skills through the use of PBL based LKPD assisted by Canva indicates that this product is effective in promoting higher order thinking processes. The results of the effectiveness test through N-Gain calculations and hypothesis testing show a significant difference between the experimental and control classes, indicating that the developed LKPD has a positive impact on students learning outcomes. These findings are supported by studies showing that the consistent implementation of PBL can enhance students critical and analytical thinking skills (Budiyanti & Utami, 2024). The structured presentation of problems in the LKPD has also been proven to strengthen in depth conceptual understanding (Halimah *et al.*, 2023). The use of digital based media such as Canva enriches visual and interactive content, which has been empirically shown to improve the effectiveness of science learning (Agustin *et al.*, 2024). The effectiveness of digital learning media is further reinforced by findings that the combination of attractive design and problem solving approaches has a significant influence on student engagement and learning outcomes (Ahmadiyah *et al.*, 2023). Recent research indicates that the development of instructional media that explicitly integrates critical thinking skills into each learning activity is proven to enhance students competency achievement.

Based on observations during the field trial, students showed positive responses to the PBL based IPAS LKPD. The students appeared more focused during the learning process, demonstrated strong interest in the visual design of the LKPD, and were more active in exploring information and engaging in group discussions. Several students also began to pose relevant questions related to the problems presented, indicating a higher level of cognitive engagement. The classroom teacher noted that the use of this LKPD encouraged students to develop conceptual understanding through real world problem solving, which is aligned with the indicators of critical thinking skills.

## CONCLUSION

Based on the results of the development and evaluation, the PBL based IPAS LKPD assisted by Canva was proven to be feasible, practical, and sufficiently effective in improving the critical thinking skills of fourth-grade elementary school students on the topic of plant body parts. The feasibility of the LKPD was demonstrated through validations by material, design, and language experts, all of which indicated a very feasible category. Its practicality was reflected in the positive responses from both teachers and students regarding the use of the LKPD in learning activities. The effectiveness of the LKPD was also verified through statistical tests showing a significant improvement in students' critical thinking skills compared to learning using conventional worksheets. This study recommends that the development of interactive digital based teaching materials integrated with the PBL approach should be continuously pursued in order to create learning experiences that are adaptive, contextual, and capable of fostering higher-order thinking skills among elementary school students.

## AUTHOR'S NOTE

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