

Developing Canva-Based Interactive Multimedia with PBL Integrated into Google Forms and Liveworksheets for Elementary Indonesian Language

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ABSTRACT

The integration of digital technology in elementary Indonesian language instruction remains limited, leading to monotonous learning and low student engagement, especially in the context of Society 5.0. This study aimed to develop and evaluate an interactive multimedia product based on Canva, integrated with Google Forms and Liveworksheets, and designed using the Problem-Based Learning (PBL) approach to support procedural text writing in grade IV. The research employed the ADDIE development model, involving analysis, design, development, implementation, and evaluation stages. Participants included three expert validators (material, media, language), 10 teachers in a Focus Group Discussion, and 56 fourth-grade students from three elementary schools in Padang, Indonesia. Data collection instruments included validation sheets, practicality questionnaires, and pretest-posttest learning outcomes analyzed using N-Gain and t-tests. Results showed that the developed multimedia was highly valid, with expert ratings ranging from 88.16% to 98.43% and FGD feedback averaging 97.34%. Practicality was rated very high by both teachers (94.32%) and students (95.85%). Effectiveness testing revealed a significant improvement in learning outcomes (N-Gain = 83.58%), with a t-test indicating significant differences between experimental and control groups ($p < 0.05$). These findings demonstrate that Canva-based interactive multimedia with PBL is a valid, practical, and effective learning tool. It enhances engagement and procedural writing skills, aligning well with the demands of 21st-century and technology-integrated education.

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1. INTRODUCTION

Writing skills, particularly procedural text writing, remain a major challenge in Indonesian language learning at the elementary school level. Many students encounter difficulties in generating ideas,

organizing text structures, and using appropriate written language conventions (Fitria Wilda et al., 2025). This situation contributes to the low level of students' literacy competence, which is a fundamental foundation for their future academic success. Therefore, innovative learning strategies are required to enhance student motivation and active engagement in developing writing skills.

At the same time, the education sector is currently facing the era of Society 5.0, which emphasizes the integration of advanced technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), big data, and robotics into everyday life to promote human-centered sustainable development (Sugiarto & Farid, 2023). This transformation urges educational systems to adapt to technological advancements, particularly through the implementation of the Independent Curriculum that focuses on the development of 21st-century skills including critical thinking, creativity, collaboration, communication, and digital literacy (Santiani et al., 2024).

Within this context, teachers are expected to serve as facilitators who design interactive multimedia learning resources aligned with the characteristics of digital-native students, rather than acting solely as transmitters of information (Heryani et al., 2022). The use of digital interactive media has been shown to improve motivation, deepen conceptual understanding, and enhance learning outcomes through the integration of text, visuals, audio, video, and animation (Alga et al., 2024). Canva offers potential as an intuitive platform for creating engaging multimedia instructional materials (Miftahul Jannah et al., 2023).

Other supporting applications that can be combined with Canva are Google Forms and Liveworksheets. Google Forms allows you to create questions, surveys, and online learning evaluations in a variety of question formats, including multiple-choice, essay, Likert scale, and more (Mamudah et al., 2024). Meanwhile, Liveworksheets allows teachers to create interactive worksheets that students can work on online and the results can be automatically summarized (Nirmayani, 2022). The combination of these three platforms is highly relevant for implementation in the Independent Curriculum-based learning process because it is practical, flexible, and able to increase active student engagement.

The development of digital learning media must also be grounded in theoretical foundations. The Cognitive Theory of Multimedia Learning posits that learning becomes more meaningful when information is presented through complementary modalities such as words and visuals (Mayer, 2021). Meanwhile, Constructivist Theory emphasizes that students construct knowledge through active exploration and problem-solving. Consistent with this view, Problem-Based Learning (PBL) fosters critical thinking, collaboration, and the creation of new knowledge through authentic problem scenarios (Jianingsih et al., 2024; Utami et al., 2025). Therefore, integrating interactive multimedia with PBL is expected to effectively enhance procedural writing skills.

Although previous studies have examined the use of Canva or PBL separately in Indonesian language instruction, limited research has integrated Canva, PBL, Google Forms, and Liveworksheets simultaneously for teaching Indonesian in elementary schools, especially to support writing skills. This condition indicates the existence of a research gap that requires further investigation to address current educational demands in the Society 5.0 era.

Based on the results of a preliminary study conducted at three elementary schools in Padang City SDN 32 Andalas, SDN 30 Kubu Dalam, and SDN 22 West Andalas the researchers found that the learning process was still dominated by conventional media such as printed textbooks, worksheets, and occasional YouTube videos displayed via an infocus. These media were one-way and did not allow for direct interaction between students and the media. As a result, students were less motivated to participate in learning, and their interest in literacy and writing skills remained low.

Furthermore, interviews with teachers at the three schools revealed that they face limitations in developing technology-based learning media. These challenges include limited resources, time, cost, and a lack of competence in designing interactive digital media. The teachers also stated that they were unfamiliar with the concept of interactive multimedia and struggled to select learning models appropriate to the characteristics of digital media.

The results of the student needs questionnaire analysis supported these findings, stating that the majority of students felt that current learning was uninteresting, monotonous, and lacked two-way

interaction. Students stated that they were more interested in learning using visual media such as animation, video, and interactive games. This aligns with the opinion of Puspitaningrum et al., (2024) which emphasizes the importance of providing teaching materials that support two-way, independent, and interactive learning so that students are active during the learning process.

Given these challenges, innovative solutions are needed to address the challenges of 21st-century learning while simultaneously improving students' writing skills, particularly in procedural text writing. A strategic effort that can be undertaken is the development of interactive multimedia learning media utilizing Canva, complemented by Google Forms and Liveworksheets, and integrated with the Problem-Based Learning (PBL) model. Such an integration is anticipated to generate interactive, engaging, and effective learning experiences that foster students' literacy skills while reinforcing the implementation of the Independent Curriculum in the Society 5.0 era.

Based on this background, the researcher is interested in conducting research with the title "Developing Canva-Based Interactive Multimedia with PBL Integrated into Google Forms and Liveworksheets for Elementary Indonesian Language." The research questions are formulated as follows: (1) To what extent is the developed Canva-based interactive multimedia valid? (2) How practical is the multimedia when implemented in classroom learning? (3) How effective is the multimedia in improving students' learning outcomes, particularly in procedural text writing?

2. METHODS

This study employed a Research and Development (R&D) design focused on product validation and effectiveness testing using a quasi-experimental method. R&D was selected because it aligns with the objective of developing an interactive multimedia learning product and assessing its feasibility and effectiveness in improving student learning outcomes (Sugiyono, 2020). The development process adopted the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) as described by (Rachma et al., 2023). The explicit justification for using ADDIE lies in its systematic, iterative, and adaptive structure, which is highly suitable for the development of digital learning media that supports 21st-century learning demands. Moreover, compared to other instructional design models such as Dick & Carey or Borg & Gall, which are more complex and time-consuming, ADDIE offers a more efficient framework for developing technology-based instructional media at the elementary school level without compromising the rigor of product validation and evaluation. The product developed in this study was an interactive multimedia learning media for Indonesian language instruction, integrating Canva, Google Forms, and Liveworksheets within the Problem-Based Learning (PBL) framework. This integration aims to promote problem-solving skills, creativity, and digital literacy that are essential for learners in the digital era.

2.1 Analysis Stage

At this stage, the analysis conducted is needs analysis, curriculum analysis, and material analysis. Curriculum analysis, the stage where researchers conduct an analysis of the learning outcomes (CP) that students want to achieve after using the development product in learning, including attitudes, knowledge, and skills. Student analysis, namely the stage where researchers identify the number of students, characteristics, skills, activeness and learning conditions of students. Educator analysis, namely the researcher identifies the conditions of teachers in teaching and any problems encountered while teaching and analyzes the needs of teachers. Material analysis, namely the stage where researchers analyze what materials need to be developed.

2.2 Design Stage

The design phase is the planning or planning stage of a product development project. After obtaining information from the analysis phase, this information can be used as the basis for designing the product the researcher is developing: a learning medium using Canva, a combination of Google

Forms and Liveworksheets, based on a PBL approach, which will later be implemented in the independent curriculum learning process in fourth grade.

2.3 Development Stage

The development phase is the stage where interactive multimedia that has been previously designed is developed and then further developed through product feasibility testing, which is carried out by validating the product by several experts. The steps taken in this development phase are:

a) Validation Stage

At this stage, the product is validated by experts in media, material, and language, as well as by practicing teachers, using validation instruments prepared by the researcher. The validation process aims to evaluate the content and quality of the developed product. The validators are asked to provide an assessment based on the validation sheet instrument and provide suggestions to the researcher regarding the product being developed. After validation by the validators, the researcher then analyzes the data from the validation sheet instrument to determine whether the product being developed is valid or not.

b) Revision Stage

At this stage, the product is revised and refined by the researcher based on feedback, suggestions, and criticisms provided by validators through the validation sheet.

c) Focus Group Discussion (FGD) Stage

Focus Group Discussion (FGD) is carried out collaboratively by teachers and researchers to discuss and apply the developed media in the learning process. This FGD was conducted at one school, namely SDN 32 Andalas, with representatives from each of the fourth-grade homeroom teachers from three elementary schools: SDN 32 Andalas, SDN 30 Kubu Dalam, and SDN 22 Andalas. The purpose of this FGD was to socialize and obtain feedback on the operation of the media developed by the researcher.

Next, the researchers conducted a trial phase of the developed product in schools. The trial was conducted on small/limited groups, which the researchers will implement in one school, namely the fourth-grade students of SDN 30 Kubu Dalam.

2.4 Implementation Stage

The implementation stage aimed to examine the feasibility and effectiveness of the validated interactive multimedia in real classroom settings. The intervention was carried out in two elementary schools: SDN 32 Andalas as the experimental group, where interactive multimedia integrated with the PBL model was used, and SDN 22 Andalas Barat as the control group, which received conventional instruction relying on printed modules, students' worksheets, and teacher-centered explanations without multimedia support, consistent with prior studies on traditional instructional practices in Indonesian classrooms (Rahman et al., 2024; Ramadhan et al., 2023). The intervention lasted for four instructional sessions (2 weeks, 2 × 70 minutes per week), following the time allocation specified in the Independent Curriculum for the topic "Understanding Procedural Texts." During implementation, both groups completed identical pre-test and post-test instruments, which were constructed based on the same indicators to ensure equivalent measurement of learning gains (Kurniawan et al., 2024). Following the learning activities, practicality questionnaires were distributed to both teachers and students to obtain quantitative responses related to usability, accessibility, effectiveness of navigation, and learner engagement, in alignment with multimedia practicality evaluation frameworks (Shaufi et al., 2025). This structured implementation design enables a valid comparison of learning outcomes and user perceptions between the experimental and control groups, ensuring methodological rigor in determining the product's actual performance in classroom practice (Mayer, 2021).

2.5 Evaluation Stage

This stage is defined as the final revision of the product the researcher developed, based on input, suggestions, and criticism from the questionnaire received from validator experts, teachers, and

students, as well as the researcher's notes during the product implementation phase. This stage is carried out to ensure the product developed can effectively benefit learning in schools.

The subjects of this study consisted of instrument validators, consisting of 3 experts, namely 1 material expert, 1 media expert, and 1 language expert, SDN 32 Andalas, Padang Timur District (Group III), consisting of 20 students and 1 homeroom teacher for grade IV. SDN 30 Kubu Dalam, Padang Timur District (Group III), consisting of 16 students and 1 homeroom teacher for grade IV, and SDN 22 Andalas, Padang Timur District (Group III), consisting of 20 students and 1 homeroom teacher for grade IV. This study employed a purposive sampling technique, considering the schools' readiness to implement the Merdeka Curriculum as well as the availability of technological facilities that support the use of interactive multimedia in learning. The participants consisted of 56 fourth-grade students from three elementary schools, distributed into three groups according to the product trial stages: 16 students from SDN 30 Kubu Dalam for the limited trial, 20 students from SDN 32 Andalas as the experimental class in the large-scale trial, and 20 students from SDN 22 Andalas Barat as the control class during the effectiveness testing. This grouping allowed a clear comparison between students who received instruction using interactive multimedia and those who experienced conventional learning. In addition, 10 fourth-grade teachers from the three schools were involved in the product validation process through Focus Group Discussions (FGDs). Their involvement is considered representative, as they have relevant experience in implementing Indonesian language instruction under the Merdeka Curriculum, enabling them to provide pedagogically informed judgments about the product's feasibility. From an ethical standpoint, the study obtained formal approval from the school authorities, informed consent from the participating teachers, and parental consent regarding student participation. Throughout the data collection process, the confidentiality of participants' identities and the comfort and safety of students were ensured in accordance with ethical research principles.

The data collection instruments in this study consisted of validity, practicality, and effectiveness instruments, which were aligned with the product development objectives. The validity instrument was in the form of expert validation sheets used to assess three essential domains of media quality: content accuracy, media design and functionality, and linguistic appropriateness. The validation was conducted by three experts, each representing the fields of content, media, and language, as a triangulation approach to ensure a comprehensive evaluation of content feasibility, interface design, interactivity, and linguistic clarity. The indicators included in the validation sheets, such as content relevance, interface consistency, navigation clarity, and language readability, are presented in the Appendix. The practicality instrument involved teacher and student response questionnaires designed to measure usability, applicability, efficiency, accessibility, and learner engagement with the developed media. The questionnaires employed a Likert scale that captured the degree of agreement with each item (four-point Likert scaling, consistent with the instrument structure provided in the Appendix). Sample questionnaire items are included to ensure transparency in the evaluation process. The effectiveness instrument consisted of a learning outcome test derived from the competency achievement indicators of the Indonesian language curriculum. The test was administered as pre-test and post-test to both control and experimental groups to capture improvement in student learning performance following the intervention using the interactive multimedia. The alignment between competency indicators and test items is also provided in the Appendix to ensure accountability and clarity in assessment documentation.

This study applies both qualitative and quantitative analysis. Qualitative descriptive analysis was used to describe the developed learning media, while quantitative descriptive analysis was employed to assess the feasibility of the product in the learning process.

2.6 Quantitative Descriptive Analysis

1. Learning Media Validity Data Analysis

Validity data using a Likert scale from the validator for all assessed aspects is presented in tabular form. The validation results are then analyzed on a scale (0-100) using a formula. To measure the final validity value, the formula from Ridwan and Sunarto (2015) is as follows (Yolanda & Sri Lena, 2022):

$$x = \frac{\sum xi}{n} \tag{1}$$

Information :

x = Average validation score

$\sum X$ = Total score from validation results

n = Number of aspects assessed

To calculate the validation score, the researchers applied the following formula:

$$\frac{\text{total score}}{\text{maximal score}} \times 100\% = \text{Final percentage} \tag{2}$$

Table 1. Validation Test Result Category

Percentage	Criteria
81% - 100%	Very Valid
61% - 80%	Valid
41% - 60%	Fairly Valid
21% - 40%	Less Valid
1% - 20%	Invalid

Source : (Ramadani et al., 2024)

In addition to the Likert scale analysis, this study also employed reliability testing using Cronbach’s Alpha. Cronbach’s Alpha was used to measure the lower bound of a construct’s reliability and to ensure that each indicator within the instrument demonstrated adequate internal consistency. Cronbach's alpha values expected reliability is > 0.7 (Tentama & Situmorang, 2019).

2. Data Analysis of Learning Media Practicality

The practicality of the learning media was determined from the final scores derived from teacher and student response questionnaires, which were assessed using a Likert scale. The practicality questionnaire was described using data frequency analysis techniques using the formula:(Cahaya et al., 2024).

$$NA = \frac{PS}{SM} \times 100\% \tag{3}$$

Information :

NA = Final Value

PS = Temporary Acquisition

SM = Maximum Score

Table 2. Product Practicality Category

Percentage	Criteria
76% - 100%	Very Practical
51% - 75%	Practical
36% - 50%	Quite Practical
<35%	Less practical

Source : (Ramadani et al., 2024)

3. Analysis of the Effectiveness of Learning Media

The effectiveness of the developed product is obtained from the learning outcomes that have been given to students. Learning outcomes are seen from the Minimum Competency (KKM). To determine the learning completion of students, it is calculated using the Trianto (2011) formula, which can be found using the formula (Darmawan et al., 2022):

$$KB = \frac{T}{T_t} \times 100 \% \quad (4)$$

Information:

KB = Learning Completion

T = Total score obtained

Tt = Amount

The total score of learning outcomes was determined based on learning completeness criteria, with individual achievement assessed through formative test results and compared to the Minimum Competency Standards (KKM) of each class. In this study, the KKM functioned as a fixed benchmark that was applied uniformly across all classes and the entire school, ensuring consistency in determining students' mastery levels. The integration of the KKM in the analysis enabled the researchers to objectively categorize student performance by identifying whether each student had met or exceeded the predetermined mastery threshold.

The effectiveness test was carried out by comparing student learning outcomes before and after the use of Canva integrated with Google Forms and Liveworksheets, analyzed through the N-Gain score. This score was employed to measure the effectiveness of the pretest and posttest results using the specified formula:

$$N - Gain = \frac{Sp_{post} - Sp_{pre}}{Sm_{aks} - Sp_{re}} \times 100 \quad (5)$$

Information :

Sp_{post} = Posttest score

Sp_{pre} = Pretest score

Sm_{aks} = Ideal maximum score (100)

The calculation results obtained through the formula were interpreted into N-Gain value criteria as presented in the table:

Table 3. N-Gain Score Assessment Criteria

N-Gain Value	Category
n-gain ≥ 0.7	Tall
0.7 > n-gain ≥ 0.3	Currently
n-gain < 0.3	Low

Source: Hake in (Lestari & Ulfa, 2022)

The results obtained are expressed as percentages. These calculations are then compared against the effectiveness assessment criteria, which can be seen in the following table:

Table 4. Criteria for Learning Effectiveness

Percentage	Category
< 40	Ineffective
40 – 54	Less Effective
55- 74	Quite Effective
> 75	Effective

Source: Hake in (Lestari & Ulfa, 2022)

In addition to analyzing learning outcomes and calculating the N-Gain score, the effectiveness testing in this study also employed the independent samples t-test. The t-test was used to examine the significance of mean differences between the experimental and control groups (Erlina & Iswara, 2023). Testing of the pre-test scores was conducted to assess the equivalence of initial conditions between the experimental and control groups prior to the intervention. Meanwhile, testing of the post-test scores aimed to analyze the effect of interactive multimedia on learning outcomes. All t-test analyses were performed using SPSS software.

Following the t-test procedures, this study also utilized the effect size test to strengthen the interpretation of the treatment's effectiveness. Effect size is a meta-analytic method used to determine the effectiveness of a study both theoretically and practically, to evaluate the relative contribution of various factors, and to indicate the magnitude of the relationship between the variables being examined. In the context of this study, effect size was employed to determine the extent to which interactive multimedia influenced learning outcomes, to assess the strength of the relationship between the variables, and to evaluate the outcomes resulting from the implementation of interactive multimedia.

Table 5. Effect Size Categories

Effect Size (ES)	Effect Size Categories
$0.0 \leq ES \leq 0.2$	Small
$0.0 \leq ES \leq 0.2$	Medium
$ES \geq 0.8$	Large

Source : (Sappaile et al., 2024)

Before conducting the t-tests, assumption tests were performed, consisting of normality testing and homogeneity testing. The normality test aimed to determine whether the data distribution followed a normal pattern, which is essential for deciding whether parametric or non-parametric statistical analyses should be applied. The normality test was conducted using the Kolmogorov-Smirnov method in SPSS, with $\alpha = 0.05$ as the decision criterion. Data were considered to be normally distributed if the significance value was ≥ 0.05 and non-normal if the significance value was ≤ 0.05 .

Furthermore, homogeneity testing was conducted to examine the equality of variances between groups. This study employed the homogeneity of variance test, in which the data were categorized as homogeneous if the significance value was ≥ 0.05 and heterogeneous if the significance value was ≤ 0.05 .

If one or both assumption tests were not fulfilled, the effectiveness analysis was then shifted to non-parametric statistical techniques, namely the Mann-Whitney U test for between-group comparisons and the Wilcoxon Signed-Rank test for paired data.

2.7 Qualitative Descriptive Analysis

Qualitative data triangulation in this study was carried out through the integration of findings derived from observations and interviews to ensure the validity and depth of information related to the development process of the instructional media. The qualitative data were analyzed using a systematic thematic analysis approach. The analytical procedures included: (1) complete transcription of all interview results and observational notes, (2) repeated readings to obtain a comprehensive understanding of the data context, (3) open coding to identify relevant meaning units, (4) grouping of codes into categories with conceptual connections, and (5) formulation of key themes that reflect emerging patterns and phenomena. The trustworthiness of the data was ensured through peer debriefing and cross-data checking across multiple data sources, thereby guaranteeing that the resulting interpretations are credible and scientifically accountable.

3. FINDINGS AND DISCUSSION

The development of interactive multimedia is intended to facilitate students' understanding of learning materials, foster enthusiasm for learning, and encourage teachers to design more creative instructional media.

3.1 Analysis Stage

At the analysis stage, researchers identified fundamental problems that became the basis for the learning media development process.

3.1.1 Curriculum Analysis

The analysis stage of the Independent Curriculum involves several systematic steps as outlined below: (1) Determining Learning Outcomes (CP); (2) Analyzing each Learning Outcome and developing it to obtain Learning Objectives (TP) in achieving the CP target in the Indonesian language subject that students want to achieve after using the development product in learning, both attitudes, knowledge, and skills; (3) Analyzing learning materials that are in accordance with the Independent Curriculum teaching guidebook; (4) Compiling a teaching module for grade IV Indonesian language subject CHAPTER 5 Exchanging and Paying for the Theme of Understanding Procedural Texts; and (5) Creating interactive multimedia learning media using Canva based on the Problem-Based Learning (PBL) model in Indonesian language learning in Elementary Schools. The developed learning media is aligned with curriculum analysis mapping, which serves as the foundation for designing interactive multimedia using Canva within the Problem-Based Learning (PBL) model.

3.1.2 Student Analysis

This research was conducted in the fourth grade of SDN 22 Andalas Barat with 20 students, SDN 30 Kubu Dalam with 16 students and SDN 32 Andalas with 20 students in the 2024/2025 Academic Year. From the three schools, there are 56 students. The researcher conducted a small group test at SDN 30 Kubu Dalam, while the researcher conducted a large group test at SDN 32 Andalas as the experimental class and SDN 22 Andalas Barat as the control class.

The analysis of student needs questionnaires revealed that many students had limited understanding of the material, which contributed to boredom, reduced enjoyment, and a less engaging learning process. Students focused solely on learning using modules, student worksheets (LKS), and student worksheets (LKPD) as supplements, and minimal use of technology-based supporting learning media.

The results obtained by researchers through observations, interviews, teacher questionnaires, and student questionnaires indicate that students show a high level of interest in learning media presented in an engaging visual manner. They are more enthusiastic when learning media is complemented by multimedia elements such as text, images, videos, and animations that can clarify the material and improve understanding. Furthermore, flexibility in the use of learning media is also an important factor; students feel comfortable and supported when learning media can be accessed through various devices, be it laptops, mobile phones, or through projection using an infocus in the classroom.

3.1.3 Teacher Analysis

In the preliminary study phase, researchers conducted research in three elementary schools: fourth-grade students at SDN 22 Andalas Barat, SDN 30 Kubu Dalam, and SDN 32 Andalas. Based on the preliminary study, researchers found that for independent curriculum learning, teachers still experience difficulties in the need for digital technology-based learning media that meet the requirements of the independent curriculum. After analyzing the teacher needs analysis questionnaire, regarding the issue of technology-based learning media, it was found that besides videos, teachers had never created and tried technology-based Indonesian language learning media such as interactive multimedia using Canva combined with Google Forms and Liveworkseets based on the Problem-Based

Learning (PBL) model in fourth-grade elementary schools. The use of videos as supporting learning media was also rarely done by teachers. Then, for material delivery, teachers only focused on textbooks, modules, LKS, and LKPD from publishers accessed through the Ministry of Education and Culture website. Although schools provide facilities such as projectors and internet access to support varied teaching methods, these resources have not been utilized optimally by teachers.

Material Analysis

The material analysis carried out was that the fourth grade teacher and the researcher had discussed CP or material that would be developed and implemented in fourth grade in phase B, namely Chapter 5 Exchanging and Paying the Theme of Understanding Procedural Texts in the Indonesian language subject which includes the topic of objectives and characteristics of procedural texts, types of procedural texts, as well as the structure and writing of procedural texts.

3.2 Design Stage

At this stage, the learning media were designed based on data from the preliminary study. The interactive multimedia for Indonesian language learning was developed using Canva, integrated with Google Forms and Liveworksheets, and optimized for storage on mobile devices, computers, laptops, and flash drives.



Figure 1. Cover Page



Figure 2. Attendance Page



Figure 3. Researcher Profile Page



Figure 4. Button Instructions Page



Figure 5. Menu Page



Figure 6. Material Topic Page

3.3 Development Stage

At this stage, the developed learning media were validated, followed by a Focus Group Discussion (FGD) with teachers to obtain feedback on operational aspects and improvements. A validation questionnaire was distributed to collect suggestions and comments, which were then used to revise the product. Subsequently, the revised media were tested in a small group trial with fourth-grade students at SDN 30 Kubu Dalam. This development stage includes:

3.3.1 Validity Test

Product validation was conducted by three expert validators, namely a language expert and a material expert from the Department of PGSD FIP UNP, and a media expert from the Department of Educational Technology FIP UNP.

1) Validity of Subject Matter Experts

The following presents the results of material expert validation of Canva-based interactive multimedia for grade IV Indonesian language learning in elementary school.

Table 6. Validation Results by Material Experts

No	Rated aspect	Score
A. Content (Material) Suitability		
1	Suitability of material with Learning Outcomes (CP) and Learning Objectives (TP)	4
2	Material relevant to the context and needs of students	4
3	The material is in line with the applicable curriculum	3
4	The material reflects positive values	4
B. Contextual and Actuality		
5	The material is linked to real life or actual phenomena.	4
6	The material is updated and follows current scientific developments/issues.	4
7	The concepts or theories presented are academically appropriate	3
8	Examples or illustrations support contextual understanding of the material.	4
C. Completeness and Depth of Material		
9	The material covers all the necessary topics.	3
10	The material is presented at a depth appropriate to the level of the students.	3
D. Systematics and Integration		
11	The material is arranged logically and systematically	3
12	The parts of the material are interrelated and form a complete flow of thought.	3
E. Evaluation and Feedback		
13	There is an evaluation that is in accordance with learning objectives	4
14	There is a clear evaluation to measure student understanding.	3
15	Feedback is provided on the evaluation results	4
16	There are opportunities for students to reflect on their learning outcomes.	4
Amount		57
Percentage		89.06%
Category		Very Valid

Based on the table above, the average validation score by subject matter experts reached 89.06%, which is considered highly valid. This means the developed product is considered highly suitable for use in the field, although several aspects still require improvement. Suggestions from the material expert validator included: Orientation of the problem at the beginning of the lesson should be based on images that are close to the students' environment to increase their curiosity, and refinement of word choice to make the material more communicative and easier for students to understand. These

comments and suggestions will be used as guidelines to improve the content of the interactive multimedia product being developed.

2) Media Expert Validity

The following presents the results of media expert validation of learning media applications using Canva in Indonesian language subjects.

Table 7. Validation Results by Media Experts

No	Rated aspect	Score
A. Content Suitability		
1	Learning media designed according to learning outcomes.	3
2	Learning media displays information about learning achievements, learning objectives, and learning topics.	4
B. Visual Design		
3	Attractive media display design tailored to target users	3
4	Button descriptions are provided as a guide to use.	4
5	Use colors, fonts and layouts that are appropriate and not distracting	3
6	Illustrations in learning media are in accordance with the learning material	3
C. Interactivity and Navigation		
7	There is a two-way interaction that encourages student involvement.	4
8	There is feedback for students when interacting with the media	4
9	Navigation buttons are clear and work well	4
D. Audio Quality		
10	The sound quality is clear and easy to understand	3
11	Music or sound effects support and do not interfere with concentration.	3
E. Clarity and Readability		
12	Text is easy to read in terms of font type and size.	3
13	Information is presented systematically	3
F. Suitability with Student Characteristics		
14	Media according to target users	4
15	Media is made according to the needs of students	4
G. Functional Media		
16	Learning media can function well without errors/bugs	4
17	Media compatible with smartphone devices	4
H. Media Efficiency		
18	The media is easy to use without requiring complicated instructions.	4
19	Time spent studying media is effective and efficient	3
Amount		67
Percentage		88.16%
Category		Very Valid

Based on the table, the average validation score from media experts was 88.16%, categorized as very valid. This shows that the developed learning media are suitable for implementation, although some aspects still need refinement. The comments and suggestions provided by the media expert validator included the need for the LKPD and evaluation to be in one application to make it easier for students to complete them, the text density should be reconsidered to suit the capacity of elementary school students, and the use of shorter videos to prevent students from getting bored. The comments and suggestions from the media expert were used as a reference to refine the interactive multimedia product developed using Canva.

3) Validity of Linguists

The results of validation by language experts on Canva-based interactive multimedia for Indonesian language subjects are presented as follows.

Table 8. Validation Results by Linguists

No	Rated aspect	Score
A. Language Accuracy		
1	Sentence structure according to correct grammatical rules	4
2	Word selection (diction) according to meaning and context	4
3	Spelling and punctuation according to the General Guidelines for Indonesian Spelling (PUEBI)	4
4	Learning media uses correct standard words	4
B. Clarity of Ideas		
5	Learning media conveys a logical and systematic sequence	4
6	Easy to understand learning media	4
7	Learning media uses words/phrases that are unambiguous and clarify meaning	4
8	Illustrations in learning media support understanding of writing	4
C. Integration		
9	The relationship between paragraphs is logical and sequential	4
10	The relationship between sentences is mutually supportive	4
11	Paragraphs are arranged in a systematic order	4
12	Learning media uses appropriate conjunctions	4
D. Sentence Effectiveness		
13	Learning media uses effective and efficient sentences	3
14	Learning media that is easy to read	4
15	Writing style appropriate to context and audience	4
16	The writing style is communicative	4
Amount		63
Percentage		98.43%
Category		Very Valid

The average validation score from linguists was 98.43%, classified as very valid. This demonstrates that the developed product is highly appropriate for practical application, despite the need for minor revisions in certain aspects. As for suggestions and comments from language experts after reviewing all components in the learning media application using Canva, namely adjusting words and sentences to be more effective, concise, and easy for students to understand.

The reliability test of the media validity assessment scores by the three experts showed the following results.

Table 9. Cronbach's Alpha Statistical Reliability

Cronbach's Alpha	N of items
0.769	3

The table above shows that the validation assessments by the three validators were valid and categorized as high. It can be concluded that the media validation conducted by the validators on the Canva-based interactive multimedia developed is acceptable.

3.3.2 Focus Group Discussion (FGD)

FGD in this study was conducted to assess, provide input, and provide suggestions from teachers regarding the designed learning media as a validation tool. This activity was conducted at an elementary school, SDN 32 Andalas, and was attended by 10 teachers representing the three fourth-

grade homeroom teachers from SDN 22 Andalas Barat and SDN 30 Kubu Dalam, along with the researcher as the speaker.

Table 10. Focus Group Discussion Results

No	Rated aspect	Score
1	Material	97.50
2	Language	94.50
3	Presentation	98.00
4	Graphics	99.38
Average		97.34%
Category		Very Valid

The validation results for the interactive multimedia learning media based on the Problem-Based Learning (PBL) model, developed using Canva integrated with Google Form and Liveworksheets, obtained an average score of 97.34%. This score falls within the very valid category, indicating the product's feasibility and suitability for classroom implementation.

3.4 Implementation Stage

The learning media have been declared valid and ready for implementation in two schools: SDN 30 Kubu Dalam and SDN 32 Andalas. After the product has been tested, researchers will conduct a practicality test by distributing a practicality questionnaire to teachers and students.

3.4.1 Practicality by Teacher

Data regarding the practicality trial of interactive multimedia using Canva was obtained from primary data sources, obtained directly from fourth-grade teachers at SDN 30 Kubu Dalam and SDN 32 Andalas. Teachers completed a practical questionnaire following the use of the Canva-based interactive multimedia with the Problem-Based Learning (PBL) model in Indonesian language learning. The trial results, including teacher evaluations and suggestions, are summarized in the following table based on assessments from SDN 30 Kubu Dalam and SDN 32 Andalas.

Table 11. Recapitulation Results of Practical Tests by Teachers

No	Rated aspect	Score	
		SDN 30 Kubu Dalam	SDN 32 Andalas
1	Practicality of using learning media	16	15
2	Time efficiency	4	4
3	Suitability of illustration	4	4
4	Language	8	7
5	Evaluation	11	10
Amount		43	40
Percentage		97.73%	90.91%
Average		94.32%	
Category		Very Practical	

Data is presented in a practical test diagram by teachers

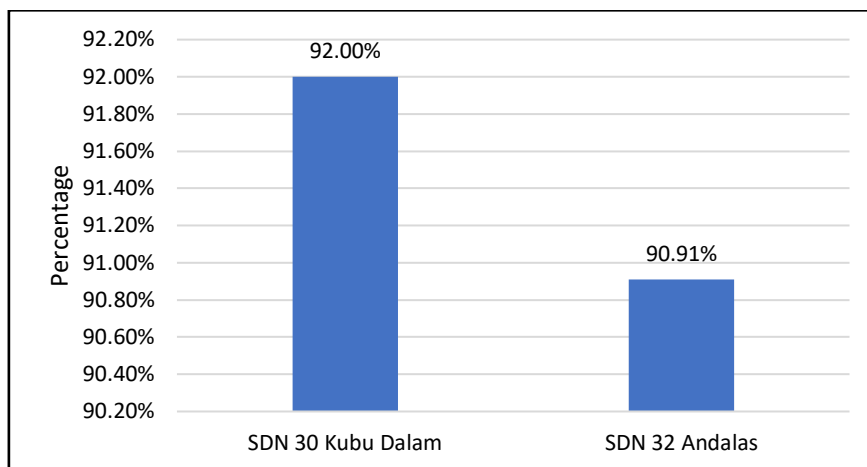


Figure 7. Results of Practical Tests by Teachers

The practicality test conducted by teachers yielded an average score of 94.32%, classified as very practical. This demonstrates that the Canva-based interactive multimedia with the Problem-Based Learning (PBL) model is effective and user-friendly for supporting Indonesian language learning in grade IV elementary school.

3.4.2 Practicality by Students

Data regarding the interactive multimedia practicality trial using Canva was obtained directly from students through a questionnaire. The trial subjects were fourth-grade students at SDN 30 Kubu Dalam and SDN 32 Andalas. Following the product trial, students evaluated the interactive multimedia by completing a practicality questionnaire. A summary of their assessment results is presented in the table below.

Table 12. Summary Results of Practical Tests by Students

No	School	Total Score of All Users	Percentage
1	SDN 30 Kubu Dalam	659	93.61%
2	SDN 32 Andalas	863	98.07%
Average Practicality Category			95.84% Very Practical

Data is presented in a diagram of practical tests by students

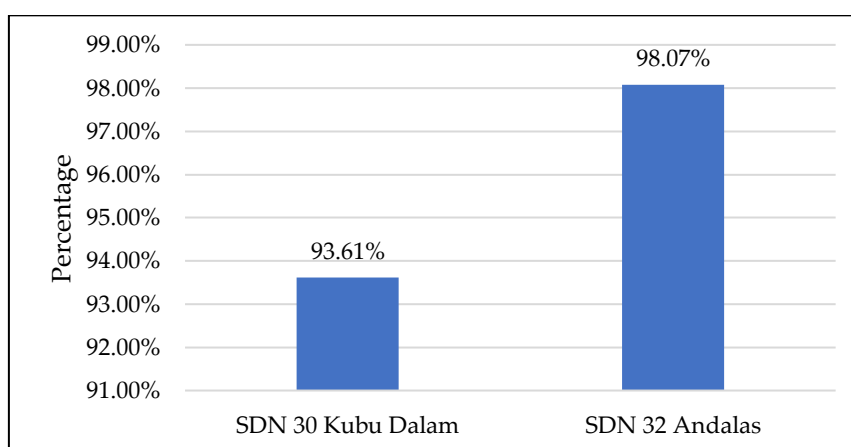


Figure 8. Results of Practical Tests by Students

The results indicate that students’ average practicality score reached 95.85%, categorized as very practical. This finding demonstrates that the Canva-based interactive multimedia with a Problem-Based Learning (PBL) approach is highly practical and suitable for use in fourth-grade Indonesian language learning.

The practicality tests conducted by both teachers and students indicate that Canva-based interactive multimedia with a Problem-Based Learning (PBL) approach received highly positive responses. The media is considered easy to use, requires no major revisions, and is ready for implementation in the learning process.

3.5 Evaluation Stage

3.5.1 N-Gain Test

The effectiveness test was carried out in three phases: a pretest to assess students’ initial competence, the learning process where the experimental group utilized Canva-based interactive multimedia while the control group received conventional instruction, and a posttest to evaluate learning outcomes after the treatment. All activities were conducted in a face-to-face classroom setting. The summary of the effectiveness test results for the Canva-based interactive multimedia with a Problem-Based Learning (PBL) approach in fourth-grade Indonesian language learning is presented in the following table.

Table 13. Summary Results of the Effectiveness Test of Using Canva Learning Media

No	Class	Pretest Average	Posttest Average	Average N-Gain Score	Average N-Gain Score (%)	Category
1	Control	68.50	84.00	0.51	50.77	Less Effective
2	Experiment	71.50	94.50	0.84	83.58	Effective

The data is presented in the Effectiveness Test of Using Canva Learning Media diagram

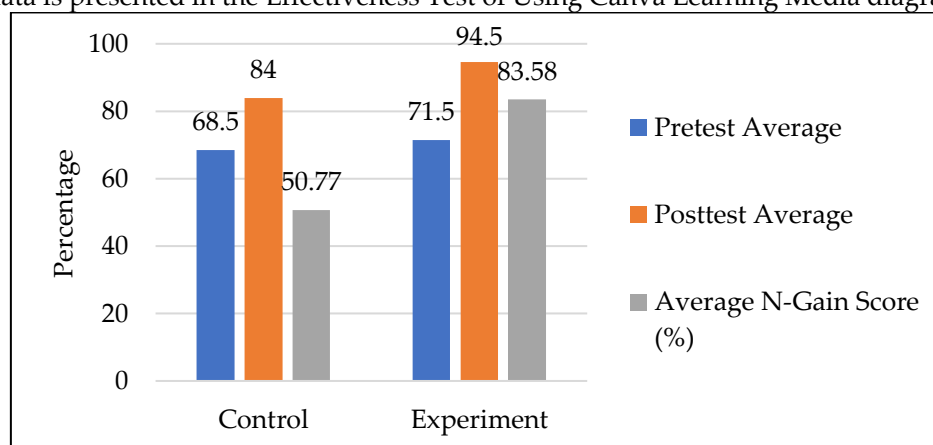


Figure 9. Effectiveness Test of Using Canva Learning Media

The N-gain analysis shows that the experimental class using Canva-based learning media achieved an average score of 83.58, categorized as high and effective, whereas the control class following conventional methods scored 50.77 on average, classified as moderate and less effective.

These findings indicate that Canva-based interactive multimedia, integrated with the Problem-Based Learning (PBL) model, is effective and appropriate for enhancing learning outcomes in fourth-grade Indonesian language instruction.

3.5.2 Independent Sample T-Test

Normality test

This normality test is performed as an absolute requirement before conducting parametric statistical analysis. The normality test is performed with the test criteria of achieving a significance value of $\alpha \geq 0.05$, which means the data obtained are normally distributed. If the significance value of $\alpha \leq 0.05$, the data obtained are said to be non-normally distributed. The results of the normality test for the data are shown in the table below.

Table 14. Normality Test

Learning outcomes	Class	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Posttest	Experiment	.107	20	.200	.970	20	.633
	Control	.122	20	.200	.950	20	.266
Pretest	Experiment	.203	20	.131	.860	20	.208
	Control	.339	20	.200	.739	20	.160

Based on the results of the normality test for the two research variables in Table 4 It can be concluded that the pre-test variable is normally distributed and the post-test variable is normally distributed because both have a significance value > 0.05 . Thus, inferential statistical analysis can be used in hypothesis testing.

Homogeneity Test

The homogeneity test was conducted to determine whether the two samples from the experimental class and the control class were homogeneous. The homogeneity test was conducted with test criteria that showed that $P > \alpha = 5\%$ or a probability greater than 0.05, then the data could be said to be homogeneous. The results of the homogeneity test can be seen in Table 1.5.

Table 15. Homogeneity Test

Class		Levene Statistics	df1	df2	Sig.
Experiment	Based on Mean	8.526	1	38	.106
Control	Based on Mean	8.316	1	38	.576

Table 5 presents the data from the homogeneity test, with the F count of the experimental class being 8.526, with a significance of 0.106, in accordance with the findings of the homogeneity test of the research variables, while the F count of the control class was 8,316, with a significance of 0.576. Based on the statistical significance of the Pre-Test or Post-Test data in the control class and the experimental class, which was greater than 0.05, it can be concluded that the data in this study had homogeneous variance.

Hypothesis Testing

Based on the results of the normality test and homogeneity test data that have been conducted, it shows that the data obtained are normally distributed and have homogeneous variance. Therefore, in testing the differences in the pretest and posttest scores of the experimental and control classes, an independent sample T-test can be used. This test is conducted to see or determine whether there is a significant difference between the pretest and posttest scores before and after treatment, where the experimental class uses Canva-based interactive multimedia and the control class uses conventional methods in the learning process. The results of the independent sample T-test can be seen in Table 16.

Table 16. T-Test Pretest Analysis Results

t-test for Equality of Means						
T	df	Sig. (2-tailed)	Mean Difference	Standard Error	95% Confidence Interval of the Difference	
					Lower	Upper
-.642	38	.526	-3.000	4.676	-12.467	6.467
-.642	31.428	.526	-3.000	4.676	-12.532	6.532

In the results of the independent sample t test that has been carried out in table 5, the results of the pretest data obtained a sig. (2-tailed) value of 0.526 > 0.05. Then the hypothesis (Ho) is accepted or (Ha) is rejected. With the acceptance of the null hypothesis (Ho), it can be concluded that during the pretest, the two classes had not been given treatment, so there was no significant difference in the pretest results. Meanwhile, to find out if there is a significant difference after the treatment, an independent sample t-test can be carried out on the posttest results.

Table 17. Posttest Analysis Results of T-Test

t-test for Equality of Means						
T	df	Sig. (2-tailed)	Mean Difference	Standard Error	95% Confidence Interval of the Difference	
					Lower	Upper
-3,013	38	.000	-9.000	2.987	-15.046	-2.954
-3,013	31,077	.000	-9.000	2.987	-15.091	-2.909

In the results of the independent sample t-test that has been carried out in Table 17, the results of the post-test data obtained a significant. (2-tailed) value of 0.000 < 0.05, which means 0.000 is smaller than 0.05. This indicates a difference in results in the experimental class and the control class, so Ho is rejected and Ha is accepted. Therefore, it can be concluded that there is a significant influence of the application of Canva-Based Interactive Multimedia with a Problem-Based Learning (PBL) Approach that is Integrated with Google Forms and Liveworksheets on students' Indonesian language learning outcomes.

After conducting the t-test, this study also used an effect size test to strengthen the interpretation of the treatment's effectiveness. The effect size test aims to determine the level of influence of interactive multimedia on learning outcomes, assess the strength of the relationship between variables, and evaluate the learning outcomes resulting from the implementation of interactive multimedia. Through this analysis, it can be determined which learning process is more effective between learning using Canva-Based Interactive Multimedia and learning implemented without the use of interactive multimedia.

Table 18. Interpretation of Effect Size Results

Class	Mpost	Mpre	Standard Deviation	Effect size	Standard Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Experiment	94.50	71.50	9.10	0.78	2.417	-22.059	-11.941
Control	85.50	68.50	9.234	0.49	2.065	-27.322	-18.678

Based on the data analysis, an effect size of 0.78 (medium category) was obtained in the experimental class and 0.49 (small category) in the control class. The higher effect size in the

experimental class indicates that the use of Canva-Based Interactive Multimedia had a greater impact on improving student learning outcomes compared to learning without the use of media.

Qualitative feedback

Based on qualitative data obtained through classroom observations, documentation of learning activities, and teacher reflections, several key themes emerged that describe the implementation of Canva-based interactive multimedia using the Problem-Based Learning (PBL) model in Indonesian language instruction. The first theme relates to students' active interaction with the multimedia, in which most learners demonstrated high enthusiasm, direct engagement, and independence in exploring the presented materials, videos, and interactive quizzes. During the learning process, students appeared more focused, more confident in expressing their opinions, and more actively involved in discussions to solve the contextual problems presented through the media. This was supported by observational findings indicating that students "were able to understand the material more easily because it was accompanied by images, videos, and clearly structured problem-solving steps." The second theme concerns the challenges encountered during implementation, particularly in terms of digital literacy and time management. Some students still required guidance in operating certain media features and experienced delays in completing tasks when internet connectivity was unstable. Nevertheless, these challenges did not disrupt the overall learning process, as teachers were able to address them through direct assistance and flexible time management strategies. The third theme reflects teachers' perspectives on the use of the multimedia, revealing that teachers perceived the media as highly supportive in creating more interactive, meaningful, and student-centered learning experiences. Teachers stated that "the use of Canva-based PBL makes students more motivated, more actively engaged in critical thinking, and less easily bored compared to conventional instruction." Overall, these qualitative findings indicate that Canva-based interactive multimedia is not only quantitatively effective in improving learning outcomes, but also provides positive learning experiences by enhancing student interaction, motivation, and engagement throughout the learning process.

Discussion

This study shows that Canva-based interactive multimedia combined with Google Forms and Liveworksheets and integrated with the Problem-Based Learning (PBL) model is declared valid, practical, and effective, and has been proven to be able to significantly improve student learning outcomes. Validity test results showed that the media met the criteria for appropriate content, appearance, language, and presentation. Practicality tests demonstrated that the media was easy for teachers and students to use, while effectiveness tests demonstrated a significant increase in learning outcomes before and after using the media.

Canva-based interactive multimedia combined with Google Forms and Liveworksheets for the Indonesian Language subject "Understanding Procedural Texts" received a very valid category based on validation results conducted by experts and students. This validity is based on several indicators, including the presentation of material in the form of images, animations, learning videos, and interactive quizzes that can increase student learning motivation. The presentation successfully created an interactive and interesting learning atmosphere and was able to increase student engagement during the learning process. This finding is in line with the Cognitive Theory of Multimedia Learning, which emphasizes that learning will be more effective when information is presented through an integrated combination of verbal and visuals, thereby maximizing students' cognitive processing, and minimizing irrelevant cognitive load (Mayer, 2021). Research by Alga et al., (2024) states that presenting material through digital learning videos can attract students' attention and facilitate understanding of learning concepts. Research by Tabina et al., (2024) shows that teaching materials containing interactive videos and image visualizations can significantly increase students' learning interest.

In terms of media suitability, the developed interactive multimedia has fulfilled the basic characteristics of learning media, which are characterized by an attractive visual appearance, the selection of appropriate fonts, proportional color variations, and the placement of images, animations, audio, and narratives that are harmoniously integrated. Setiawati MZ, (2019) explains that the characteristics of learning multimedia must fulfill the elements of aesthetics, readability, and balance between components in order to attract attention and facilitate student understanding. The multimedia components in this product are designed proportionally without ignoring the artistic elements, so that the information presented can be optimally received by students. The validity results of this study are consistent with previous studies that developed Canva-based learning media, which also reported a high level of validity in the aspects of visual appearance and integration of digital content. Research Ginayah et al., (2024) on interactive media based on the Canva application showed a very high level of validity, namely 93%. Research Hafizah & Samosir, (2023) shows that the validity percentage of the development of Canva-based interactive learning media was 94.17% from media experts and 92.36% from material experts, which is in the very valid criteria.

Furthermore, from an operational perspective, this media is considered highly practical because it is easily accessible, compatible with various devices, and does not require additional software installation. Consistent and simple navigation makes it easy for students to operate the media without experiencing technical difficulties. Shaufi et al. (2025) stated that one of the characteristics of effective learning media is ease of access and flexibility of use on various operating systems. This practicality also reinforces the principle of learning efficiency in the context of elementary classes, where limited time and facilities are often major challenges. Another advantage is the media's integration with online evaluation platforms such as Google Forms and Liveworksheets, which significantly facilitates teachers in automatically evaluating and summarizing learning outcomes, thereby increasing time efficiency and assessment accuracy.

The Problem-Based Learning (PBL) model applied in this interactive multimedia emphasizes the presentation of authentic problems that encourage student collaboration in small groups to build knowledge. From a constructivist perspective, PBL provides space for students to actively construct knowledge through social interaction, exploration of contextual problems, and reflection on the resulting solutions. This research shows that the effective implementation of the PBL model can improve student learning outcomes. Novianti, (2024) stated that the PBL model can significantly improve problem-solving skills and student learning outcomes. Furthermore, this model encourages students to apply the knowledge gained in real-life situations and fosters a continued interest in learning even after formal learning has concluded (Ansya, 2023).

The use of Canva-based interactive multimedia with the PBL model in Indonesian language learning in elementary schools is considered appropriate because it not only increases student interest in learning but also improves conceptual understanding and learning outcomes. Rahman et al., (2024) stated that interactive multimedia without the support of an appropriate learning model will only generate temporary interest without building in-depth understanding. Therefore, combining Canva multimedia with the PBL model has proven effective in creating an active and meaningful learning process, in line with the principles of the Independent Curriculum which focuses on strengthening 21st-century skills.

In terms of practicality, Canva-based interactive multimedia with a PBL model is categorized as highly practical because it is easy to use by both teachers and students. Teaching materials are presented through attractive images, learning videos, and interactive worksheets that can be completed online and automatically summarized through Google Forms and Liveworksheets. This finding aligns with the research results of Fauziah & Rusilowati, (2025), who stated that Canva-based media facilitates students' understanding of the material in a more practical and enjoyable way through the support of contextual material visualization. Nur Anissa & Marlina Limbong, (2024) also stated that Canva-based learning media is very easy to operate, practical to use without technical constraints, and can be applied

sustainably in learning activities. This practicality also indicates that the media has the potential for sustainable implementation in various learning contexts with diverse student characteristics.

The practicality of this media is supported by a simple navigation system, a clean interface, and the absence of additional applications. Taufik Afandi et al., (2024) emphasized that good learning media must be easily accessible, flexible to use, and compatible with various operating systems without relying on specific applications. Integrating the media with online evaluation platforms is also a crucial factor in supporting its practicality, as it facilitates teachers in automatically summarizing learning outcomes, thus making the assessment process more effective and efficient.

The PBL model also contributes to the practical aspects of learning. This model not only requires students to solve problems but also encourages collaboration and small group discussions in formulating solutions to contextual problems. This is supported by research by Hazmi & Yullys Helsa, (2025), which demonstrated that the PBL model can increase student engagement and participation in learning. Thus, the combination of the PBL model with Canva-based interactive multimedia provides a practical, enjoyable, and meaningful learning experience for students.

From the effectiveness aspect, the results of the study showed that Canva-based interactive multimedia with the PBL model was able to significantly improve student learning outcomes. The average student score increased from 71.50 in the pretest to 94.50 in the posttest, with an N-Gain value of 0.84 (83.58%) which is included in the high effectiveness category. This finding is in line with the research of Kurniawan et al., (2024) who reported that Canva-based interactive multimedia significantly improved learning outcomes with an N-Gain value of 57.94% which is classified as quite effective. Furthermore, based on the results of the hypothesis test using the independent samples t-test, it was found that at the pretest stage there was no significant difference between the experimental class and the control class, as indicated by a significance value of $0.526 > 0.05$. This indicates that the initial abilities of both groups were in an equal condition before the treatment was given. However, the results of the posttest test showed a significance value of $0.000 < 0.05$, which indicates a significant difference in learning outcomes between the two groups. The effect size value with a medium category in this study reflects that the difference in learning outcomes between the experimental group and the control group has strong statistical significance and meaning, so it can be concluded that the independent variable has a fairly large influence on the dependent variable.

The effectiveness of this media is supported by its multimedia capabilities in presenting easy-to-understand teaching materials through visualizations, engaging learning videos, and interactive quiz features that can directly measure student learning outcomes. Furthermore, ease of navigation and integration with online evaluation platforms contribute to increased learning effectiveness. Ramadhan et al., (2023) stated that Canva-based learning media, with its high level of validity, has been proven effective in improving student learning outcomes.

The PBL model implemented in this media also positively contributes to learning effectiveness. Sitanggang et al., (2024) emphasized that the PBL model links learning materials to real-life problems and encourages students to think critically and actively in problem-solving. Thus, the integration of Canva-based interactive multimedia with the PBL model has been empirically proven to improve student learning outcomes while developing 21st-century skills.

These findings have important implications for teacher competency development, particularly in mastering interactive multimedia design, digital literacy, and the implementation of innovative learning models such as PBL. In terms of generalizability, the results of this study have the potential to be applied to other grade levels in elementary schools, subjects with similar characteristics, and school contexts with adequate technological facilities. However, application to different contexts still requires adjustments to the design and learning strategies. As a recommendation for future development, this interactive multimedia can be enhanced by adding adaptive quiz features, automated feedback based on artificial intelligence (AI), and increasing interactivity through simulations or educational games. These innovations are expected to enrich the learning experience and accommodate differences in student abilities. Limitations of this study include the relatively limited sample size, the short duration

of the learning intervention, and the lack of long-term retention measurements of student learning outcomes. Therefore, further research is recommended that involves a wider sample, a longer implementation period, and examines the impact of media on retention and transfer of learning.

4. CONCLUSION

This research confirms that Canva-based interactive multimedia which is integrated with the Problem-Based Learning (PBL) model and enriched with Google Forms and Liveworksheets has proven to be very valid, practical and effective in improving elementary school students' Indonesian language learning outcomes. The integration of these three digital platforms is an innovative model for learning Indonesian, which is in line with the demands of 21st century digital literacy. The results of this research confirm that the use of PBL-based multimedia design can strengthen student involvement in problem solving, clarify understanding of the material, and increase learning outcomes. Teachers are recommended to adopt this media as part of routine learning strategies. Further development can be directed at adding adaptive features and application to other subjects and grade levels in order to expand the acceptability and impact of its use.

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