



Development of Liveworksheets Based E-Worksheets in Pancasila Education Learning for Grade IV Elementary Students in Cluster 1, Talang Muandau District, Bengkalis Regency

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ABSTRACT

This study addresses limited innovation in elementary Pancasila Education, where paper based student worksheets (LKPD) dominate and provide little interactive feedback. It aimed to develop electronic LKPD (E LKPD) on Liveworksheets that are interactive and engaging, thereby improving pupils' comprehension and involvement. Using the ADDIE Research and Development framework Analysis, Design, Development, Implementation, Evaluation the product was piloted with Grade IV learners: initial trials at SDN 8 Talang Muandau, further research at SDN 20, and full implementation at SDN 11. Content, media, and language experts assessed the E LKPD, awarding an average validity of 90.42 percent, classifying it as "highly valid." Practicality questionnaires returned scores of 93.66 percent at the trial school, 93.86 percent at the research school, and 95.64 percent at the implementation school, all rated "highly practical." Effectiveness was tested via pre and post assessments; Mann-Whitney analysis produced $p = 0.000$ (< 0.05), confirming significant improvement in learning outcomes after using the E LKPD. The digital format incorporates automatic feedback, multimedia elements, and diversified exercises aligned with the Merdeka Curriculum, making learning more student centred and promoting critical thinking skills. These findings demonstrate that the Liveworksheets based E LKPD is a valid, practical, and effective tool for enriching Pancasila Education in Grade IV.

1. Introduction

The rapid development of information and communication technology (ICT) has had a significant impact on various aspects of life, including education. In today's digital era, technology functions not only as a supportive tool but has become a primary medium in facilitating more effective, efficient, and engaging learning processes. In the educational context, the integration of technology is believed to

enhance the quality of learning by presenting materials in a more varied and interactive manner, as well as accommodating different student learning styles (Hendra et al., 2023). Technology plays a crucial role as a facilitator in creating contextual learning experiences that align with the demands of the times (Nuridayanti et al., 2023).

The Merdeka Curriculum, currently implemented in Indonesia, emphasizes the importance of technology integration in the learning process. This curriculum is designed to promote student-centered learning that is contextual and relevant to technological advancement and the needs of modern society. One strategy that can be adopted is the development of interactive digital learning media to foster student interest and understanding of learning materials. Furthermore, the Merdeka Curriculum incorporates national values and character education as integral components of its educational goals, particularly through the subject of Pancasila Education.

Pancasila Education at the elementary school level aims to develop students who are faithful, pious, and possess noble character, as well as a love for others, the nation, and the environment (Dewi, 2022). This subject plays a strategic role in shaping students into responsible, democratic citizens with a strong sense of nationalism and patriotism from an early age. Through this learning, students are expected to understand and apply the core values of Pancasila such as mutual cooperation, social justice, and diversity in their daily lives (Sudrajat & Budi Astuti, 2023).

However, the implementation of Pancasila Education still faces several challenges. One of the main issues is the predominantly theoretical and monotonous method of delivering the content, which often results in students feeling bored and struggling to comprehend and apply the material (Widowati, 2016). This condition highlights the need for innovation in the learning process, especially in providing engaging and interactive learning media. Learning media serve as an essential tool for educators to deliver content more effectively, in ways that are easier to understand and better suited to the characteristics of the learners (Salwani & Ariani, 2021).

One of the most promising forms of digital media for educational development is the Electronic Student Worksheet (E-LKPD). E-LKPD is a digital-based instructional tool designed to strengthen students' cognitive skills through various learning activities such as experiments and problem-solving exercises (Rahayu & Budiyo, 2018). Compared to conventional worksheets, E-LKPD offers advantages in flexibility, visual appeal, and the capacity to present interactive content accessible online. Well-designed E-LKPD can stimulate students' curiosity, boost learning motivation, and facilitate both physical and emotional engagement in the learning process (Haqsari, 2020).

Observations conducted in four elementary schools in Talang Muandau District revealed that, although schools are equipped with adequate technological facilities such as projectors, speakers, Wi-Fi, and laptops the integration of technology in Pancasila Education remains limited. Teachers continue to face challenges in

developing digital learning materials, including E-LKPD. The majority of teachers are not yet familiar with or have not utilized digital E-LKPD platforms such as Liveworksheets. As a result, conventional paper-based worksheets are still predominantly used in classroom activities.

In contrast, interview findings show that students display enthusiasm and interest in digital E-LKPD that is interactive, colorful, and enhanced with images and games. Students prefer learning activities that begin with videos and involve direct interaction through digital devices. These findings are consistent with previous studies that suggest digital E-LKPD can significantly improve students' motivation, engagement, and understanding of learning content (Umbaryati, 2016).

One effective platform for developing E-LKPD is Liveworksheets. This web-based application allows teachers to convert conventional worksheets into interactive digital formats that can be completed online by students. The platform offers various features, including automatic grading, audio and video integration, image insertion, and easy task distribution through shareable links (Fuada & Fajriati, 2021). Moreover, Liveworksheets is freely accessible via the internet, making it easy to use for both teachers and students.

Several previous studies have examined the development of Liveworksheets-based E-LKPD across different subjects and educational levels, as seen in the works of Widiyani & Pramudiani 2021, Fitri & Reinita 2022, Susilawati et al., 2024, Idris et al., 2023, dan Pratomo et al., 2023. However, these studies differ in terms of instructional content, grade level, learning models, research subjects, and study locations. Therefore, this study aims to fill that gap by developing a Liveworksheets-based E-LKPD specifically for Pancasila Education in Grade IV of elementary school.

As a response to the issues identified and supported by previous research, the researchers aim to develop a Liveworksheets-based E-LKPD for Pancasila Education in Grade IV of elementary school. This study is expected to provide a solution to the monotonous nature of Pancasila learning and encourage the optimal use of available technological resources in schools. Furthermore, the development of this E-LKPD is intended to enhance students' motivation, engagement, and understanding of the core values of Pancasila in everyday life.

2. Methodology

This study employed a Research and Development (R&D) approach aimed at producing a Liveworksheets-based Electronic Student Worksheet (E-LKPD) for Pancasila Education in Grade IV of elementary school. The study also sought to assess the feasibility, practicality, and effectiveness of the developed product in the learning process. The development model used was the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. This model was selected due to its systematic structure and user-friendly application in the development of technology-based learning products.

Analysis

In the analysis stage of this study, the researcher conducted two main types of analysis: needs analysis and curriculum analysis. The needs analysis was carried out through observations and interviews at four elementary schools SD Negeri 11, SD Negeri 5, SD Negeri 8, and SD Negeri 20 Talang Muandau to identify issues in the learning process. The findings revealed that the use of student worksheets (LKPD) was still limited to printed formats, lacked variation, were not engaging, and did not provide effective feedback to students. Therefore, there is a need to develop digital based LKPDs that are interactive, engaging, and capable of delivering immediate feedback. Furthermore, the curriculum analysis was conducted based on the Merdeka Curriculum, particularly focusing on the Grade IV Pancasila Education subject, Chapter 4, Topic A, which discusses the meaning of the Pancasila principles. The researcher analyzed the Learning Outcomes (Capaian Pembelajaran), Learning Objectives (Tujuan Pembelajaran), and learning materials, which then served as the foundation for designing a Liveworksheet-based E-LKPD aligned with the curriculum and the needs of the students.

Design

In the design stage, the researcher established the learning objectives by conducting an analysis in collaboration with the Grade IV homeroom teacher on the subject matter of Pancasila Education, Chapter 4, Topic A. The analysis resulted in three main learning objectives: students are expected to be able to identify the symbols of the Pancasila principles, analyze the meanings of each principle, and apply attitudes that reflect Pancasila values in everyday life. Based on these objectives, the researcher designed an engaging and interactive E-LKPD using the Liveworksheet platform. This design aims to optimize the use of technology in the learning process and to facilitate teachers in providing direct and effective feedback to students.

Development

In the development stage, the Liveworksheet-based E-LKPD that had been designed was submitted to three expert validators subject matter expert, language expert, and media expert for validation. The validation process involved providing assessment questionnaires and presenting the developed E-LKPD for thorough evaluation. Following the validation, the researcher revised the E-LKPD based on the suggestions and feedback from the three validators to improve the quality of the product. The validators involved in this process were Hasmai Bungsu Ladiva, S.Pd., M.Pd. as the subject matter expert, Nana Fauzana Azima, M.Pd. as the language expert, and Dr. Dina Amsari, M.Pd. as the media expert.

Implementation

In the implementation stage, the Liveworksheet-based E-LKPD that had been validated and revised based on feedback from the expert validators was then tested in the field. The initial trial was conducted with Grade IV students at SDN 8 Talang

Muandau, involving 30 students, to assess the practicality of the product. After being declared valid and practical, the E-LKPD was further implemented at SDN 20 Talang Muandau with 17 students and at SDN 11 Talang Muandau with 20 students. During the implementation, students were given a practicality questionnaire to evaluate their experience using the E-LKPD. In addition, teachers also assessed the practicality of the product by completing a similar questionnaire, providing a comprehensive overview of the Liveworksheet-based E-LKPD's practicality in the learning environment.

Evaluation

The evaluation stage is the final phase in the development process of the Liveworksheet-based E-LKPD. At this stage, the researcher conducted a comprehensive evaluation to determine the extent to which the developed product is effective, appropriate, and capable of achieving the intended learning objectives. The evaluation was carried out using several methods, including the distribution of response questionnaires to both teachers and students, as well as the analysis of pretest and posttest results. The teacher response questionnaire aimed to assess how the product supports the teaching process, its ease of use, and the relevance of the content to the learning needs. Meanwhile, the student questionnaire was used to gather their feedback regarding the appearance, accessibility, ease of use, and engagement with the learning media. In addition, the results of the pretest and posttest conducted before and after the implementation of the E-LKPD served as indicators of its effectiveness in enhancing students' understanding of the subject matter.

3. Results and discussion

This study aimed to develop a Liveworksheets-based Electronic Student Worksheet (E-LKPD) for the Pancasila Education subject in Grade IV elementary school and to examine its validity, practicality, and effectiveness. The product development followed the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

Validation Results

The validation process of the Liveworksheet-based E-LKPD involved three aspects: material, language, and media. The first material validation scored 61.33%, categorized as "usable with several revisions." After revisions based on expert feedback, the second validation improved to 82.66%, which falls into the "very valid" category according to the validity criteria by Ridwan and Sunarto. For the language aspect, the initial validation result was 55%, categorized as "less valid" and required major revisions. After implementing the suggested improvements, the second validation score increased to 74% ("fairly valid"), and following further revisions, the third validation reached 95%, classified as "very valid" and deemed usable without further revision. These results confirm the high validity of the E-LKPD's language component.

Meanwhile, the media validation initially scored 87.2% with the category “very valid” and was considered usable with minor revisions. After making the recommended improvements, the final validation score increased to 93.6%, still within the “very valid” range and usable without any revisions. Based on the average of all three validation aspects material (82.66%), language (95%), and media (93.6%) the final overall validity score was 90.42%. According to Ridwan and Sunarto’s classification, this percentage falls under the “very valid” category. Therefore, the Liveworksheet-based E-LKPD for Pancasila Education in Grade IV of elementary school is considered highly valid and appropriate for classroom use. The validation results are presented in Table 1.

Table 1. Overall Validation Results

No	Validator Name	Aspect	Score	Category
1	Hasmai Bungsu Ladiva, S.Pd, M.Pd.	Content	82,66%	Valid
2	Nana Fauzana Azima, M.Pd.	Language	95 %	Highly Valid
3	Dr. Dina Amsari, M.Pd.	Media	93,6%	Highly Valid
Average			90,42%	Highly Valid

The first display is the E-LKPD title page containing the worksheet title, developer’s name, Kurikulum Merdeka logo, material title 'The Meaning of the Principles of Pancasila in Society', and class identity. This page was created using Canva, converted to PDF, and uploaded to Liveworksheet. Its purpose is to provide students with initial information about the material to be studied and to increase their learning enthusiasm through attractive visuals.

The next display contains the learning objectives and worksheet objectives listing the expected learning outcomes. Students are guided to understand the competencies they should achieve after completing this digital worksheet. This page is designed in a concise text format with a systematic layout for easy comprehension.

The third display contains the instructions for using the E-LKPD. This page provides steps for students to follow before and while working on this digital worksheet, such as reading the instructions, praying, and accessing the link without logging in. Clear instructions are essential to prevent technical obstacles learning activities.

The fourth display presents a learning video that students can directly watch, along with a link to learning materials for independent access. The video is uploaded through Liveworksheet’s insert video feature, with the material link placed below it. This integration aims to enhance understanding through audio-visual media and facilitate easy access to materials without manual searching. The learning video and material display is presented in Figure 1.



Figure 1. Learning Video and Material

The fifth page contains two essay questions asking students to identify problems in the video and propose solutions. This exercise aims to train students' critical thinking skills in analyzing real situations and relating them to Pancasila values. The first question, which concerns the problem found in the video, was created using the text field feature, the second question, which requires students to propose a solution to the problem, was designed using the speak feature. The display of the discussion question exercises can be seen in Figure 2.



Figure 2. Discussion Question Exercise

The sixth display is a word search activity where students are tasked with finding words related to Pancasila values within a letter grid. Liveworksheet's word search

feature was utilized here, proving highly effective in training students' accuracy and concentration while reintroducing essential terms related to Pancasila in a fun and engaging way. The display of the Pancasila Values Word Search Exercise can be seen in Figure 3.



Figure 3. Pancasila Values Word Search Exercise

The final display is a drag and drop exercise where students are asked to match Pancasila symbols with their meanings. This interactive exercise was created using Liveworksheet's drag and drop feature, allowing images and texts to be moved into designated answer boxes. This activity is designed to improve students' memory of the symbols and meanings of each principle. The display of the Drag and Drop Pancasila Symbols Exercise can be seen in Figure 4.



Figur 4. Drag and Drop Pancasila Symbols Exercise

Practicality Results

The practicality test was conducted by distributing response questionnaires to teachers and students in three schools: SDN 8 Talang Muandau as the trial school, SDN 20 Talang Muandau as the research school, and SDN 11 Talang Muandau as the implementation school. The questionnaire results showed that the practicality score at the trial school was 93.66%, which falls into the "Highly Practical" category. The practicality results for the trial school are presented in Table 2.

Table 2. Overall Practicality Results Trial School

Practicality Test	Aspect	Score	Category
Trial School	Teacher Response	91,42%	Highly Practical
	Student Response	95,90%	Highly Practical
Average		93,66%	Highly Practical

SDN 20 Talang Muandau, as the research school, showed a practicality score of 93.86% based on the questionnaire results, which falls under the "Highly Practical" category. The practicality results for the research school are presented in Table 3.

Table 3. Overall Practicality Results Research School

Practicality Test	Aspect	Score	Category
Research School	Teacher Response	91,42%	Highly Practical
	Student Response	96,30%	Highly Practical
Average		93,86%	Highly Practical

SDN 11 Talang Muandau, as the implementation school, obtained a practicality score of 95.64% based on the questionnaire responses, which is categorized as "Highly Practical." The practicality results for the implementation school are presented in Table 4.

Table 4. Overall Practicality Results Implementation School

Practicality Test	Aspect	Score	Category
Implementation School	Teacher Response	94,28%	Highly Practical
	Student Response	97%	Highly Practical
Average		95,64%	Highly Practical

All practicality results fall under the "Highly Practical" category. Teachers reported that the E-LKPD is easy to use, accessible on digital devices, and supports effective material delivery. Students also expressed that the E-LKPD was engaging, enjoyable, and motivated them to learn more actively.

Effectiveness Results

The effectiveness assessment of the Liveworksheet-based E-LKPD across three different schools showed positive results. At the trial school, the pre-test scores were normally distributed ($P\text{-value} = 0.075 > 0.05$), while the post-test scores were not ($P\text{-value} = 0.000 < 0.05$). Due to the non-normal distribution of the post-test data, a Mann-Whitney test was used, resulting in a $P\text{-value}$ of $0.000 (< 0.05)$,

indicating a significant difference between pre-test and post-test scores. This suggests that the implementation of the Liveworksheet-based E-LKPD effectively improved student learning outcomes in Pancasila Education at the trial school. Similar findings were observed at the research school, where the pre-test scores were normally distributed ($P\text{-value} = 0.140 > 0.05$) and the post-test scores were not ($P\text{-value} = 0.000 < 0.05$). The Mann-Whitney test again showed a significant difference between pre-test and post-test scores ($P\text{-value} = 0.000$), confirming the effectiveness of the E-LKPD in enhancing students' academic performance.

At the implementation school, the pre-test scores were also normally distributed ($P\text{-value} = 0.209 > 0.05$), while the post-test scores were not ($P\text{-value} = 0.000 < 0.05$). The Mann-Whitney test revealed a significant difference between pre-test and post-test scores ($P\text{-value} = 0.000 < 0.05$), further supporting the conclusion that the Liveworksheet-based E-LKPD effectively improved student learning outcomes. Based on these consistent results across the trial, research, and implementation schools, it can be concluded that the developed Liveworksheet-based E-LKPD is effective and can be successfully used by students in the learning process, particularly in Pancasila Education at the elementary school level.

Furthermore, the implementation of the Liveworksheets-based E-LKPD during classroom learning revealed several distinct advantages. First, the platform significantly enhanced student engagement and motivation. Students showed increased enthusiasm in completing tasks, especially due to the interactive features such as video integration, drag-and-drop activities, and automatic feedback. The visual appeal and digital accessibility of the worksheets made the learning experience more enjoyable, reducing boredom often associated with traditional paper-based exercises. These features supported diverse learning preferences and encouraged more active participation during lessons.

The use of Liveworksheets-based E-LKPD allowed teachers to deliver materials more efficiently and effectively. The automated correction system minimized the time needed for manual grading, allowing educators to focus more on providing personalized support and enrichment. Teachers also found it easier to monitor students' progress through digital records, enabling more responsive instructional adjustments. These benefits demonstrate that the developed E-LKPD not only improves learning outcomes but also supports a more modern, efficient, and student-centered teaching approach in line with the Merdeka Curriculum principles.

4. Conclusion

Overall, the results of this study indicate that the development of a Liveworksheets-based E-LKPD for Pancasila Education is highly feasible, practical, and effective for use in the classroom. Expert validation confirmed that the E-LKPD meets the necessary criteria in terms of content, language, and design. Positive responses from both teachers and students further support its practicality and appeal in the learning process.

In addition, the effectiveness of the E-LKPD is demonstrated by a significant improvement in students' learning outcomes. This can be attributed to the E-LKPD's ability to deliver engaging and interactive learning experiences, supported by varied exercises, appealing visuals, and instructional videos that help students better understand the material.

Therefore, the Liveworksheets-based E-LKPD can serve as an innovative solution for teaching Pancasila Education in elementary schools, particularly in addressing the challenges of monotonous and less engaging instruction. It also promotes the optimal use of available technological resources in schools, aligning with the principles of the *Kurikulum Merdeka*, which emphasizes technology integrated learning.

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