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Development of a Multimedia-Oriented Problem-Based Learning Model to Support SDG 4: Quality Education for Grade IV Elementary School Students

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Abstract: This research is motivated by the low involvement of students in learning Pancasila Education in elementary schools, the limited use of innovative interactive learning media, and the need for a learning model that is able to develop critical, collaborative, and problem-solving skills. This research aims to develop a Canva-based interactive multimedia oriented to the Problem Based Learning (PBL) model that is valid, practical, and effective in improving the learning outcomes of grade IV elementary school students in the subject of Pancasila Education. This type of research is research and development using the ADDIE model which includes five stages, namely analysis, design, development, implementation, and evaluation. The validity of the product is assessed by subject matter experts, media experts, and linguists. Practicality was measured through the responses of teachers and students using questionnaires, while effectiveness was tested through a comparison of pretest and posttest results analyzed using the N-Gain formula. The results of the study showed that the interactive multimedia developed obtained a very valid category with an average score of 89.56%. In addition, this media is stated to be very practical based on positive responses from teachers and students, especially in the aspects of ease of use, attractive visual appearance, and clarity of navigation. In terms of effectiveness, interactive multimedia has been proven to be able to improve students' learning outcomes with an N-Gain value of 77.67 which is included in the high category. Thus, Canva-based interactive multimedia oriented to the PBL model can be an innovative learning media alternative that is valid, practical, and effective to improve the quality of learning.

Keywords: Canva; Elementary school; Interactive multimedia; Problem Based Learning (PBL)

Introduction

Interactive multimedia is a combination of various media elements such as text, images, audio, video, and animation that are integrated in one system and allow direct interaction with users. In the context of education, interactive multimedia acts as an effective tool to clarify the presentation of material and make it easier for students to understand learning (Ali et al., 2025; Arrum et al., 2023; Çeken & Taşkın, 2022). The use of interactive multimedia has been proven to be highly effective in supporting the learning process, increasing teacher creativity, and helping to overcome students' learning difficulties. In addition, this media is also able to create a more fun, less boring learning atmosphere, and contributes significantly to improving learning achievement (Fajrina et al., 2025; Karimah et al., 2025).

Along with the development of technology, interactive multimedia development can be done through various applications, one of which is Canva. Canva is a web-based and mobile-based graphic design application that provides a variety of features for

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developing interactive learning media such as presentations, videos, animations, and infographics (Nisyaa et al., 2025; Sari et al., 2024). Ease of use and full feature availability make Canva an effective alternative in supporting the development of creative, innovative, and interactive learning media (Fajrina et al., 2025; Irmawati et al., 2023). Through Canva, various multimedia elements can be integrated into one learning product that is flexible, easily accessible, and allows collaboration between teachers and students, thus enhancing a more meaningful learning experience (Maulia, 2023).

However, conditions in the field show that the use of interactive multimedia is not optimal. Based on the results of observations at SDN 36 Kayu Pasak, SDN 05 Kayu Pasak, and SDN 12 Padang Koto Gadang, it was found that students tend to be less active, have low motivation to learn, lack understanding of material concepts, and minimally respond in the learning process. The results of interviews with teachers also revealed that limited time and ability to master technology is the main obstacle in the development of ICT-based learning media, especially in Pancasila Education learning. Learning is still dominated by lecture methods and the use of textbooks without interactive media innovations.

In fact, various previous studies have shown that the use of interactive learning media, especially those oriented to the Problem Based Learning (PBL) model, is able to increase student motivation, engagement, and learning outcomes. PBL-based learning media is considered valid, practical, and effective in supporting more meaningful learning. This shows the need for the development of interactive learning media that is not only innovative but also able to accommodate students' active involvement in the learning process. These problems are influenced by the lack of use of technology-based learning media that is integrated with an active learning approach. In addition, students have also not been given optimal opportunities to learn independently through activities such as observing, analyzing, experimenting, collaborating, and communicating learning results (Muliana et al., 2024; Novelita & Darmansyah, 2022). Therefore, efforts are needed to develop ICT-based learning media that are able to answer these needs, one of which is through the development of interactive multimedia oriented to the Problem Based Learning (PBL) model.

PBL-oriented interactive multimedia allows for the creation of more active, effective, and meaningful learning because it encourages students to be directly involved in the problem-solving process. With the support of the Canva app, interactive multimedia can be designed more attractively and according to the characteristics of elementary school students. Various studies have also shown that PBL-based interactive multimedia is feasible and effective in improving student learning outcomes in various subjects (Arifin et al., 2024; Cahyani et al., 2021; Yunitasari & Hardini, 2021).

Method

This research is a research and development (R&D) that aims to produce Canva-based interactive multimedia with a Problem Based Learning (PBL) approach on learning Pancasila Education for grade IV elementary school students. This method was chosen because it allows the development of systematic, valid, practical, and effective learning products according to the needs of learning in the field (Mesra, 2023). The development model used is the ADDIE model which consists of five stages, namely analysis, design, development, implementation, and evaluation (Anggraini & Putra, 2021; Branch, 2009). This model was chosen because it has a systematic, flexible procedure, and allows evaluation and revision at every stage of development.

The analysis stage was carried out through preliminary studies in three elementary schools, namely SDN 36 Kayu Pasak, SDN 05 Kayu Pasak, and SDN 12 Padang Koto Gadang, Agam Regency. Activities at this stage include curriculum analysis, student characteristics, teacher abilities, and learning material analysis. Data were collected through observation, interviews, and questionnaires to identify learning problems and media development needs. The design stage aims to design an interactive Canva-based multimedia product that matches the characteristics of the students and the PBL approach. The activities carried out include the preparation of flowcharts, storyboards, the design of interactive content (text, images, audio, video, and animation), as well as the determination of visual design and communicative language. The results of this stage are in the form of an initial prototype of learning media.

The development stage is a process of product development as well as validation by experts including material experts, media experts, and linguists. The instrument used is a validation sheet based on the Likert scale. After the validation process, product revisions are carried out based on validator input. In addition, a Focus Group Discussion (FGD) was conducted with teachers to obtain input related to the use and implementation of media in learning. The implementation stage was carried out through product trials on grade IV students in three elementary schools with a total of 54 students. At this stage, practicality data is collected through

teacher and student response questionnaires, as well as effectiveness measurement through learning outcome tests (pretest and posttest). The evaluation stage is carried out formative and summative. Formative evaluation is carried out at each stage of development for product improvement, while summative evaluation is carried out to assess the overall effectiveness of the product on student learning outcomes (Akker et al., 1999).

The type of data in this study consists of qualitative and quantitative data. Qualitative data was obtained from interviews, observations, and validator suggestions, while quantitative data was obtained from the results of validity, practicality, and student learning outcome questionnaires. The research instruments used included a needs analysis questionnaire, validation sheets, practicality questionnaires, and learning outcome tests. Data collection techniques are carried out through observation, interviews, questionnaires, and tests.

The data analysis technique was carried out descriptively. Validity and practicality analysis was conducted using percentage calculation based on the Likert scale, while effectiveness was analyzed using the N-Gain formula to see an increase in student learning outcomes between pretest and posttest. The assessment criteria refer to the categories of validity, practicality, and effectiveness that have been established in previous studies (Purwantoro, 2010).

Result and Discussion

Results

This research aims to develop Canva-based interactive multimedia oriented Problem Based Learning (PBL) in learning Pancasila Education grade IV elementary school using the ADDIE model. The results of the study include the stage of development, validity, practicality, and effectiveness of the product. At the analysis stage, the results of the preliminary study showed that learning was still dominated by conventional methods with limitations in interactive media. Students have difficulty understanding the material, are less active, and have low motivation to learn. Meanwhile, teachers are still limited in the use of technology even though facilities are available. Therefore, interactive multimedia was developed in accordance with the Merdeka Curriculum, especially the "My Identity" material.

The design stage produces interactive multimedia designs in the form of flowcharts, storyboards, and learning content that integrates text, images, animations, and audio. The media design is prepared by paying attention to the characteristics of elementary school students, using simple language, and attractive and interactive visual displays.

Figure 1. Interactive multimedia cover

Figure 2. Home section view

In the development stage, interactive multimedia products are validated by media, material, and language experts. The validation results showed that the media was in the very valid category, with the average validity of media experts at 93.57%, material experts at 83.42%, and linguists at 91.11%. In addition, the results of the Focus Group Discussion (FGD) with teachers showed a validity level of 96.96% which was also in the very valid category. These results show that interactive multimedia is feasible in learning.

The implementation stage is carried out through small and large group trials. The results of the practicality test showed that the media was included in the very practical category, with the practicality value of students at 86.98% and educators at 92.67%. This shows that the media is easy to use, efficient, and can increase student engagement in learning.

The effectiveness of the media is measured through a comparison of pretest and posttest results. The results showed a significant increase, with the average posttest score reaching 86.25. The N-Gain analysis showed a value of 77.67 (high category), which indicates that PBL-based interactive multimedia is effective in improving student learning outcomes.

Discussion

The results of this study show that the integration of Canva-based interactive multimedia with the PBL approach can significantly improve the quality of learning in Pancasila Education. The findings at the early stages indicate that there is a gap between the demands of the Independent Curriculum and classroom learning practices, especially in the use of technology and active learning approaches. This condition is in line with research that states that the integration of technology in learning is still not optimal at the basic level (Fathurrahman et al., 2024; Suryanti & Utari, 2025).

From the perspective of learning design, the interactive multimedia developed has accommodated the principles of constructivism through the application of PBL syntax, namely problem orientation, exploration, collaboration, and reflection. This approach allows students to actively build knowledge through contextual learning experiences. This is in line with the theory of constructivism put forward by Ibda (2015) and Trianto (2015) which states that PBL can improve students' critical thinking and problem-solving skills. A high level of validity indicates that the product has met the feasibility aspects of content, presentation, language, and visual design. In particular, the suitability of the material with learning outcomes and the use of communicative language are important factors in improving students' understanding. In addition, the attractive and interactive visual design contributes to increased student attention and motivation to learn. In addition, the attractive and interactive visual design contributes to increased students' attention and motivation to learn, as affirmed by Mayer (2014) through the theory of multimedia learning.

From the practical aspect, the results of the study show that interactive multimedia is easy to implement in learning. Ease of navigation, integration of interactive features, and flexibility of use through various devices are the main advantages of this product. This indicates that Canva-based technology has great potential as an adaptive and user-friendly alternative to digital learning media. This is in line with previous research findings on the effectiveness of digital media in learning (Désiron et al., 2025; Donna et al., 2021). The effectiveness of interactive multimedia in improving learning outcomes shows that the combination of technology and the right pedagogical approach has a significant impact on learning. An increase in N-Gain scores in the high category indicates that students experience not only cognitive improvement, but also active engagement during the learning process.

These findings are consistent with research by Dewi & Armiati (2025) and Hadi (2022) which shows that PBL-based interactive multimedia is able to improve students' learning outcomes, motivation, and critical thinking skills. Thus, this study reinforces the empirical evidence that the integration of digital technology in learning, particularly through Canva-based design, can be an innovative solution in improving the quality of basic education. However, this study has limitations in the scope of the subject that is still limited to some elementary schools, so generalization of results needs to be done carefully. Therefore, further research is recommended to test the effectiveness of the product in a broader context as well as integrate other variables such as digital literacy and 21st century skills.

Conclusion

This research produced a Canva-based interactive multimedia-oriented Problem Based Learning (PBL) for learning Pancasila Education in grade IV elementary school students. The developed product has interactive characteristics with integration of text, images, videos, animations, as well as problem-based activities designed to encourage active student engagement, critical thinking, and collaborative learning. The results of the study show that the interactive multimedia developed meets the criteria very valid based on the assessment of material, media, and language experts, so it is suitable for use in learning. In addition, this product also has a very high level of practicality, shown by its ease of use, time efficiency, and the ability of the media to increase student motivation and involvement. In terms of effectiveness, PBL-based interactive multimedia has been proven to be able to significantly improve student learning outcomes, with an N-Gain value in the high category. This improvement does not only occur in the cognitive aspect, but also in the affective and psychomotor aspects, which reflects the success of learning Pancasila Education holistically.

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Author Contributions

Conceptualization, E.S. and A.B.; methodology, software, formal analysis, investigation, resources, data curation, writing—original draft preparation, E.S.; writing—review and editing, visualization, J., U.R., and R. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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