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Development of Canva Based Flashcard Learning Media in Science and Social Studies Lessons for Fourth Grade Elementary School

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Abstract: This study aimed to develop Canva-based flashcard learning media for Grade IV elementary school IPAS and to examine its validity, practicality, and effectiveness in learning Indonesia's cultural diversity. This research employed the Research and Development (R&D) method using the ADDIE model, which consists of analysis, design, development, implementation, and evaluation. The study was conducted at SDN 7 Batu Ajung as the pilot school and SDN 9 Koto Tuo and SDN 2 Jambu Lipo as the research schools. The developed media achieved validity scores of 90% for material, 100% for media, and 95% for language, indicating that it was highly valid. Practicality testing resulted in scores of 95, 95, and 93% across the three schools, demonstrating that the media was highly practical. The effectiveness test showed that the average student learning outcomes increased from a pre-test score of 54.33 to a post-test score of 87.99, with an average N-Gain score of 0.76, categorized as high. These findings indicate that the Canva-based flashcard learning media effectively improved students' understanding and engagement in IPAS learning. Therefore, the developed media is valid, practical, and effective for supporting Grade IV IPAS learning in elementary schools.

Keywords: ADDIE model; Canva-based flashcards; Elementary education; Problem-based learning; Research and development

Introduction

Education plays an essential role in developing students' knowledge, skills, and character to meet the demands of the twenty-first century (Widiawati et al., 2022). The implementation of the current curriculum emphasizes student-centered learning, the development of competencies, and the integration of technology into classroom instruction (Nafi'ah et al., 2023). Consequently, teachers are expected to create meaningful learning experiences through innovative instructional strategies and digital learning media that actively engage students.

One subject that requires innovative learning media is *Ilmu Pengetahuan Alam dan Sosial* (IPAS). As an integrated subject combining natural and social sciences, IPAS requires students to understand abstract concepts, analyze relationships between natural and social phenomena, and connect classroom learning with real-life situations (Israwaty et al., 2025). Therefore, learning activities should encourage active participation, critical thinking, and meaningful interaction with learning resources (Putri et al., 2023). However, these expectations have not been fully realized in elementary school classrooms.

Preliminary observations conducted in Grade IV classrooms at SDN 7 Batu Ajung and SDN 9 Koto Tuo revealed several challenges in IPAS learning. Teachers predominantly relied on lecture methods and printed textbooks, while the use of learning media remained limited (Yuniarti et al., 2023). Although students demonstrated curiosity, they quickly lost interest when learning activities lacked variation. Consequently, students became passive during classroom discussions

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and experienced difficulties in understanding IPAS concepts, particularly those requiring visual representation .Learning achievement also remained relatively low, indicating that existing instructional practices had not optimally supported students' conceptual understanding (Ilahy et al., 2025).

The integration of digital learning media offers a potential solution to these challenges. Learning media can facilitate the delivery of information, improve students' motivation, and support meaningful learning experiences (Nurmalisa et al., 2023). Among various instructional media, flashcards have been widely recognized as an effective visual learning tool because they combine concise information with illustrations that help students organize and retain knowledge (Salsabila & Wahyudi, 2025). When designed digitally using Canva, flashcards become more attractive, flexible, and easier for teachers to develop and modify according to students' learning needs. Canva also provides diverse templates, visual elements, and user-friendly features that enable teachers to produce high-quality instructional materials without requiring advanced graphic design skills (Amelia et al., 2023).

To maximize student engagement, the developed flashcards were integrated with the Problem-Based Learning (PBL) approach (Juniantari & Suniasih, 2023; Astuti et al., 2026). Through PBL, students are encouraged to identify problems, discuss possible solutions, analyze information, and communicate their findings collaboratively (Yunitasari et al., 2025). The visual characteristics of Canva-based flashcards support these learning activities by enabling students to observe, classify, match, and discuss concepts more actively, thereby promoting deeper conceptual understanding (Yusrizal & Rahmati, 2022; Wangi & Bukhori, 2023).

Several previous studies have reported the effectiveness of flashcards and Canva as instructional media in improving students' motivation and learning outcomes (Amaliah & Anwar, 2023). Nevertheless, limited studies have developed Canva-based flashcards specifically for Grade IV IPAS learning while simultaneously evaluating their validity, practicality, and effectiveness through a systematic Research and Development (R&D) approach. Moreover, most existing studies focus on general learning outcomes rather than addressing the specific instructional challenges associated with integrated IPAS content in elementary schools. This gap indicates the need for developing learning media that are pedagogically appropriate, visually engaging, and practically applicable in classroom settings (Siregar, 2023).

This study focuses on the Grade IV IPAS topic of Indonesia's cultural diversity. The topic introduces students to the diversity of ethnic groups, traditional houses, traditional clothing, dances, local languages, and cultural traditions found across Indonesia. Since the learning content is highly visual and contextual, students often experience difficulties in understanding and distinguishing these cultural characteristics when learning relies solely on printed textbooks (Febriyanto & Yanto, 2019). Therefore, learning media that combine visual representations with concise explanations are needed to help students understand the concepts more effectively while fostering appreciation for Indonesia's cultural diversity (Dewi et al., 2026).

The novelty of this study lies in the development of Canva-based flashcard learning media specifically designed for Grade IV IPAS instruction. Unlike conventional flashcards, the developed media utilize Canva's digital features to produce attractive visual representations while being integrated with Problem-Based Learning activities that encourage active student participation (Hariyanto et al., 2025; Tibrani, 2026). The media were systematically developed using the ADDIE model and evaluated in terms of validity, practicality, and effectiveness to ensure their feasibility for elementary school learning.

This research is important because elementary school teachers need practical and accessible digital learning media that can support the implementation of student-centered learning in the Merdeka Curriculum. In Maryani & Palloan (2026) although various digital learning resources are available, many are not specifically designed to address the characteristics of Grade IV IPAS content or to facilitate active learning through problem-solving activities. Canva-based flashcards integrated with the Problem-Based Learning (PBL) approach provide an innovative and feasible solution, as they are easy to develop, visually engaging, and adaptable to different classroom contexts (Lalilyo & Husain, 2026). Furthermore, by evaluating the media in terms of validity, practicality, and effectiveness across three elementary schools, this study provides empirical evidence that can support teachers and schools in selecting appropriate digital learning media for improving students' conceptual understanding and classroom engagement (Daria et al., 2026).

Therefore, this study aims to develop Canva-based flashcard learning media for Grade IV IPAS learning and to determine its validity, practicality, and effectiveness in supporting elementary school students' learning.

Method

This study employed the Research and Development (R&D) method using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was selected because it provides

systematic and flexible procedures for developing instructional media (Wandani et al., 2024).

First, Analysis. This stage included curriculum analysis, learner characteristics, learning material analysis, and media needs analysis to identify the necessity of developing Canva-based flashcard learning media for Grade IV IPAS. Second, Design. At this stage, the Canva-based flashcards were designed by integrating visual elements, learning materials, and the Problem-Based Learning (PBL) model (Safitri, 2026). Research instruments, including validation sheets, practicality questionnaires, and pre-test and post-test instruments, were also designed (Waruwu, 2024).

Third, Development. The Canva-based flashcards were developed according to the initial design and validated by three experts consisting of a material expert, a media expert, and a language expert. The product was revised based on the validators' suggestions before being implemented in classroom learning.

Fourth, Implementation. The validated learning media were implemented in Grade IV IPAS classrooms. After implementation, practicality questionnaires were distributed to teachers and students to evaluate the usability of the developed media (Zahra & Erita, 2026). Finally, Evaluation. This stage aimed to determine the quality of the developed media through qualitative and quantitative evaluation. Qualitative data were obtained from experts' comments and suggestions, while quantitative data were collected from the validation, practicality, and effectiveness assessments.

The study was conducted at three elementary schools in Sijunjung Regency, West Sumatra. SDN 7 Batu Ajung served as the pilot school, while SDN 9 Koto Tuo and SDN 2 Jambu Lipo served as the field-testing schools. The research participants consisted of Grade IV teachers and students. The details are presented in Table 1.

Table 1. Research participants

School Name	Number of Student	Description
SDN 7 Batu Ajung	14	Pilot School
SDN 9 Koto Tuo	9	Field Testing
SDN 2 Jambu Lipo	10	Field Testing

The research instruments consisted of expert validation questionnaires, practicality questionnaires, observation sheets, interview guidelines, documentation, and pre-test and post-test instruments. The validation questionnaire assessed three aspects, namely material, media, and language (Zen, 2026). The practicality questionnaire was administered to teachers and students after using the Canva-based flashcard learning media.

The quantitative data were analyzed using a four-point Likert scale. The scores obtained from the validation and practicality questionnaires were converted into percentages using the following formula.

$$P = \frac{F}{N} \times 100\% \quad (1)$$

Where:
P = Percentage
F = Total score obtained
N = Maximum (ideal) score

The percentage results were interpreted according to the validity criteria shown in Table 2.

Table 2. Validity criteria of Canva-based flashcard learning media

Percentage (%)	Criteria
81–100	Very Valid
61–80	Valid
41–60	Fairly Valid
21–40	Less Valid

The practicality scores were interpreted according to the criteria shown in Table 3.

Table 3. Practicality criteria of Canva-based flashcard learning media

Percentage (%)	Criteria
81–100	Very Practical
61–80	Practical
41–60	Fairly Practical
21–40	Less Practical
0–20	Not Practical

The effectiveness of the developed learning media was analyzed using the N-Gain formula.

$$N_{Gain} = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}} \times 100\% \quad (2)$$

Where:
S_{post} = Post-test score
S_{pre} = Pre-test score
S_{max} = Maximum possible score

The N-Gain values were interpreted according to the categories presented in Table 4.

Table 4. N-Gain categories

N-Gain Value	Category
G > 0.7	High
0.3 ≤ G ≤ 0.70	Medium
G < 0.3	Low

Result and Discussion

Researchers developed Canva-based flashcard learning media for Grade IV *Ilmu Pengetahuan Alam dan*

Sosial (IPAS) to support students' understanding of learning materials through visually engaging representations and concise explanations. The flashcards were designed using the Canva application by incorporating colorful illustrations, relevant images, concise learning content, and interactive layouts appropriate for elementary school students. Furthermore, the learning activities embedded in the flashcards were systematically organized according to the Problem-Based Learning (PBL) model, enabling students to observe contextual phenomena, identify problems, discuss alternative solutions collaboratively, and communicate their findings (Toma & Reinita, 2023). The integration of Canva's visual design features with the PBL approach promotes active student participation, enhances learning engagement, and facilitates meaningful learning experiences (Wangi & Bukhori, 2023). Moreover, the developed flashcards provide teachers with an innovative, practical, and user-friendly instructional medium that supports the implementation of student-centered learning in elementary classrooms.

During the analysis stage, researchers identified the instructional needs through curriculum analysis, learner characteristics, learning material analysis, and media needs analysis in Grade IV IPAS classes at SDN 7 Batu Ajung, SDN 9 Koto Tuo, and SDN 2 Jambu Lipo. Classroom observations and interviews with teachers revealed that learning activities were still dominated by lecture-based instruction and printed textbooks, while the use of innovative learning media remained limited. Consequently, students encountered difficulties in understanding IPAS concepts, particularly those related to Indonesia's cultural diversity, and showed low engagement during classroom learning. These findings highlighted the need to develop an attractive, interactive, and visually supported learning medium capable of facilitating students' conceptual understanding while promoting active participation through the Problem-Based Learning (PBL) approach.

The design stage focused on preparing the prototype of the Canva-based flashcard learning media. At this stage, the learning objectives, learning materials, visual layouts, illustrations, typography, color combinations, and instructional activities were systematically designed based on the Grade IV IPAS curriculum and the syntax of the Problem-Based Learning model (Wahyuni, 2020). Each flashcard was designed to present concise learning content accompanied by contextual problems, attractive illustrations, and guiding questions to encourage students to observe, analyze, discuss, and communicate their ideas collaboratively. In addition (Nugraheni & Ansori, 2025), research instruments, including expert validation sheets, practicality questionnaires, and pre-test and post-test instruments, were prepared to evaluate the validity, practicality, and effectiveness of the developed learning media before classroom implementation.

Figure 1. Link to access learning content of the flashcard media

Figure 2. Several traditional houses in Indonesia

After the Canva-based flashcard learning media had been fully developed, the product was evaluated through three stages: validity, practicality, and effectiveness testing. The validity test was conducted to determine the feasibility of the learning media before classroom implementation (Salamah et al., 2020). The

practicality test was carried out to determine the ease of use of the media during the learning process, while the effectiveness test aimed to measure the improvement in students' learning outcomes after using the developed media (Wati et al., 2022). The results of these three evaluations are presented in the following sections (Fernanda et al., 2025).

Validity of Canva-Based Flashcard Learning Media

The validation process involved three experts consisting of a material expert, a media expert, and a language expert. The product was considered valid if it fulfilled the required standards in terms of learning content, visual design, instructional presentation, and language appropriateness. The results of the expert validation are presented in Table 5.

Table 5. Validation results of Canva-based flashcard learning media

Validation	Percentage (%)	Category
Material	90	Very Valid
Media	100	Very Valid
Language	95	Very Valid
Average	95	Very Valid

Based on Table 5, the material validation obtained a score of 90%, indicating that the learning content was relevant to the curriculum, learning objectives, and students' characteristics. The media validation achieved the highest score of 100%, demonstrating that the visual appearance, layout, typography, illustrations, and overall design met the expected quality standards. Meanwhile, the language validation obtained a score of 95%, indicating that the language used in the Canva-based flashcards was clear, communicative, and appropriate for Grade IV elementary school students. Overall, the average validation score reached 95.00%, placing the developed learning media in the Very Valid category. These findings indicate that the Canva-based flashcard learning media are feasible for implementation after minor revisions based on the validators' suggestions (Yulinda et al., 2022; Widiawati et al., 2022).

Practicality of Canva-Based Flashcard Learning Media

Following the expert validation, the revised Canva-based flashcard learning media were implemented in three elementary schools to determine their practicality during the learning process. The practicality assessment was conducted through teacher questionnaires after the learning activities had been completed. The results of the practicality assessment are presented in Table 6.

Table 6 shows that the average practicality score reached 94.33%, indicating that the Canva-based flashcard learning media were categorized as Very Practical. SDN 7 Batu Ajung and SDN 9 Koto Tuo each obtained a practicality score of 95%, while SDN 2 Jambu Lipo obtained 93%. These results indicate that teachers found the learning media easy to use, attractive, and helpful in presenting IPAS learning materials. During implementation, the flashcards also supported the learning activities based on the Problem-Based Learning model by encouraging students to observe, discuss, and solve contextual problems actively (Ulfa et al., 2026). Therefore, the developed learning media can be implemented effectively in elementary school classrooms without requiring complicated preparation or additional instructional resources.

Table 6. Practicality results of Canva-based flashcard learning media

School	Percentage (%)	Category
SDN 07 Batu Ajung	95	Very Practical
SDN 09 Koto Tuo	95	Very Practical
SDN 2 Jambu Lipo	93	Very Practical

Effectiveness of Canva-Based Flashcard Learning Media

Following the practicality test, the effectiveness of the Canva-based flashcard learning media was evaluated through field implementation in three elementary schools. The effectiveness test aimed to determine the improvement in students' learning outcomes after using the developed learning media (Wulandari et al., 2022). Students completed a pre-test before the learning activities and a post-test after the implementation of the Canva-based flashcards. The effectiveness was analyzed using the normalized gain (N-Gain) score. The results are presented in Table 7.

Table 7. Effectiveness results of Canva-based flashcard learning media

School	Pretest	Posttest	N-Gain	Category
SDN 07 Batu Ajung	54.28	89.28	0.8	High
SDN 09 Koto Tuo	57.2	87.7	0.74	High
SDN 05 Jambu Lipo	51.5	87	0.74	High
Average	54.33	87.99	0.76	High

Based on Table 7, the effectiveness test showed that the Canva-based flashcard learning media successfully improved students' learning outcomes in all three participating schools. At SDN 7 Batu Ajung, the average pre-test score increased from 54.28 to 89.28, resulting in an N-Gain score of 0.80 (High). Similarly, students at SDN 9 Koto Tuo showed an increase in the average score from 57.20 to 87.70, with an N-Gain score of 0.74 (High), while students at SDN 2 Jambu Lipo improved from 51.50 to 87.00, achieving an N-Gain score of 0.75 (High). Overall, the average pre-test score increased from 54.33 to 87.99, with an average N-Gain score of 0.76, indicating a High level of effectiveness. These findings demonstrate that the Canva-based flashcard learning

media effectively enhanced students' understanding of IPAS concepts and supported more active participation in learning through the implementation of the Problem-Based Learning (PBL) model, making the developed media suitable for use in Grade IV elementary school learning (Amini & Saniyah, 2021).

Conclusion

This study concludes that the Canva-based flashcard learning media integrated with the Problem-Based Learning (PBL) model is a valid, practical, and effective instructional medium for Grade IV *Ilmu Pengetahuan Alam dan Sosial* (IPAS) learning in elementary schools. The development process, following the ADDIE model, successfully produced learning media that addressed students' learning needs through attractive visual design, contextual learning activities, and student-centered problem-solving tasks. Expert validation results indicated a very valid category with an average score of 95.00%, while the practicality assessment conducted in three elementary schools yielded an average score of 94.33%, demonstrating that the media were easy to use and supported classroom instruction effectively. Furthermore, the effectiveness test showed a significant improvement in students' learning outcomes, with the average score increasing from 54.33 on the pre-test to 87.99 on the post-test and an average N-Gain score of 0.76 (High). These findings indicate that integrating Canva-based flashcards with the PBL approach enhances students' conceptual understanding, learning engagement, and active participation. Therefore, the developed learning media can serve as an innovative and feasible instructional resource for improving the quality of IPAS learning in elementary education.

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Conceptualization, methodology, L.F. and Y.E.; data curation, formal analysis, writing—original draft, L.F.; investigation, writing—review and editing, L.F., Y.E., L.Z., and Z.Z.; validation, supervision, Y.E., L.Z., and Z.Z. All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest.

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