



Development of E-Flipbook Based Learning Media to Improve Students Learning Outcomes in Natural and Social Learning in Fourth Grade Elementary School

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ABSTRACT

The application of Natural and Social Sciences (IPAS) learning within the Independent Curriculum requires innovative instructional media to increase student engagement and improve learning outcomes. However, classroom practices still rely on textbooks and lecture-based methods, resulting in low participation and suboptimal achievement. This research aims to develop E-Flipbook learning media, examine its feasibility, and analyze its effectiveness in improving student learning outcomes. The study employed a Research and Development (R&D) approach based on the Borg and Gall model. Data were collected through expert validation, questionnaires, and learning achievement tests. The data were analyzed using a normality test, paired-samples t-test, and N-gain analysis. The results show that the E-Flipbook is highly feasible, with validation scores of 97% from material experts and 98% from media experts. Additionally, the paired-samples t-test indicated a significant improvement ($p < 0.001$), and N-gain results were in the moderate category. Therefore, the E-Flipbook is effective in enhancing student learning outcomes and supporting interactive learning processes.

1. Introduction

In the current era of globalization, education plays a vital and strategic role in enhancing and developing the potential of every individual so that they are able to grow and contribute to the creation of creative, competitive, and high-quality human resources (Safitri, 2023). Education is not only focused on the acquisition of academic knowledge but also emphasizes the strengthening of critical thinking skills, problem-solving abilities, collaboration, and communication competencies needed to face the challenges of the 21st century (Andriyanto et al., 2025). Furthermore, education is expected to build strong character and ethical values so that learners can actively contribute to society. Therefore, educational institutions

must create learning environments that are inclusive and student-centered. This condition underlines the important role of teachers in implementing innovative and adaptive learning strategies that match students' needs. In addition, education equips learners with the ability to adapt to rapid developments in technological, social, and cultural aspects of modern life. Learning processes should be designed to promote active participation, student engagement, and lifelong learning skills.

The implementation of the Independent Curriculum organizes learning activities to be flexible and responsive to students' characteristics, allowing teachers to apply differentiated learning strategies that accommodate diverse learning needs and abilities (Jauhari et al., 2024). This curriculum not only focuses on cognitive achievement but also emphasizes the development of attitudes, character, and skills through student-centered learning approaches (Rapelianto et al., 2026). Through this approach, students are encouraged to become more independent, creative, and responsible in their learning process. In addition, learners are trained to critically evaluate information, systematically and apply knowledge in real-life contexts. This approach also supports teachers in designing contextual learning activities that are closely related to students' daily experiences (Lestari et al., 2023). Within the framework of the Independent Curriculum, Natural Sciences and Social Sciences are integrated into IPAS to provide a more comprehensive understanding of natural and social phenomena. This integration aims to help students understand these phenomena in a more meaningful and holistic manner. IPAS learning is designed to develop scientific literacy, critical thinking skills, and problem-solving abilities through contextual learning experiences. When learning materials are connected to real-life situations, students tend to be more actively involved and find it easier to understand abstract concepts (Amelia et al., 2025). The effectiveness of IPAS learning is influenced by both internal and external factors, including motivation, discipline, intelligence, peers, and the school environment (Jamilah et al., 2024).

Learning media serves as an important tool in delivering instructional content in a clear, structured, and engaging manner. However, in many elementary schools, learning activities still largely depend on textbooks, visual aids, and conventional lecture-based teaching methods (Ismaniati & Iskhamdhanah, 2023). This condition results in limited variation in learning activities and less optimal student achievement. As a consequence, students often face difficulties in understanding abstract concepts and maintaining focus during learning activities (Putri et al., 2025). These conditions indicate that students' learning needs have not been fully met and require more adaptive learning support. Therefore, there is a strong need to develop innovative digital learning media that can create more interactive, meaningful, and effective learning experiences in the classroom. The use of appropriate learning media can help teachers present material in a more engaging way, while also supporting better conceptual understanding for students.

Along with the rapid development of technology, digital learning media such as E-Flipbook has become a relevant solution in modern education. E-Flipbook is an interactive digital book that integrates text, images, audio, video, and animation, allowing students to learn independently (Putra et al., 2023). The integration of multimedia elements helps students understand learning materials more easily and

increases their interest. Previous studies indicate that interactive digital media can improve learning outcomes and student engagement (Ramdani et al., 2020). In elementary education, flipbook-based learning media has been shown to enhance student engagement and enrich learning experiences (Muna et al., 2025). Similarly (Sari & Zulherman, 2025) found that flipbook media can increase students' interest and understanding in science learning. According to (Anastasia et al., 2025), digital flipbook media is considered valid, practical, and effective for elementary education because it presents well-structured content. This type of media supports thematic learning and helps students understand materials more easily. Meanwhile, according to Elpina et al. (2025), state that flipbook-based teaching materials assist students in understanding learning content more effectively. Furthermore, (Yusma et al. 2025) emphasize the importance of interactive digital media in supporting effective learning processes. flipbook media has a positive impact on student achievement, while Awaludin & Yulianto, (2024) highlight its contribution to improving motivation and comprehension in science learning. These findings collectively reinforce the potential of digital flipbook media as an effective and innovative learning tool in elementary education.

Based on the explanation above, the development of innovative learning media is essential to support effective and meaningful learning processes in elementary education. The use of E-Flipbook is expected to address the limitations of conventional learning methods that tend to be less interactive and less engaging for students. Through the integration of multimedia elements, E-Flipbook can improve students' engagement, motivation, and understanding in the learning process. Therefore, the purpose of this study is to develop an E-Flipbook learning media that is appropriate for IPAS learning in fourth-grade elementary school and to examine its effectiveness in improving student learning outcomes, engagement, and understanding within the framework of student-centered learning in the Independent Curriculum. In addition, this study is also expected to provide practical contributions for teachers in developing innovative digital learning media and serve as a reference for future educational research in improving the quality of elementary education.

2. Methodology

This research employs a Research and Development (R&D) approach to design E-Flipbook based learning materials that highlight the daily life of the community in my region, with the goal of improving the learning outcomes of fourth-grade students at SD Negeri 1 Wolo. The development process is based on a model adapted from Sugiyono, (2019) which consists of eight stages that serve as guidelines for developing the product. This model was selected due to its systematic structure in the development of learning media. The process is conducted step by step, beginning with problem identification and ending with the production of the final product. Furthermore, this model allows for improvements through revisions based on validation and trial results at each stage. The E-Flipbook developed in this

study presents learning materials related to community life in the surrounding the local community a more interactive format. This approach is expected to enhance students' understanding of the material an illustration of the Borg and Gall development model applied in this research is presented in Figure 1 below.

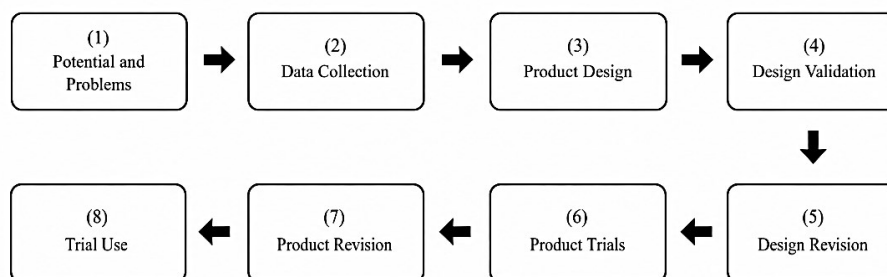


Figure 1. Borg and Gall Research Model

In this study, the research instruments were first tested for validity and reliability to ensure that each item accurately and consistently measured the research variables. Only valid and reliable instruments were used in the data collection process. After the data were collected, they were analyzed using quantitative and qualitative approaches. Quantitative analysis included a normality test, N-gain analysis, and a t-test to determine improvements and differences in students' learning outcomes before and after using the developed media. Meanwhile, qualitative analysis was used to describe the media development process, assess product feasibility, and determine the effectiveness of the media in learning. The feasibility assessment was conducted by material and media experts based on several evaluation aspects. Material Experts validation focused on content suitability and language aspects to ensure that the material was aligned with learning objectives and easily understood by students. The indicators used in the material expert assessment instrument are presented in Table 1.

Table 1. Grid of the Material Expert Assessment Instrument

Aspects	Indicator
Content Feasibility	- The content aligns with the targeted learning outcomes and objectives.
	- The material is appropriately structured with suitable depth, breadth, and sequence.
	- Concepts, examples, and questions are accurate and appropriate for students' abilities.
	- The material has the right depth and breadth and is presented in a sequential manner.
	- Concepts, examples, and questions are accurate and in accordance with the abilities of the students.
Language Qualifications	- The language used is clear, communicative, and easy for students to understand.
	- The use of grammar, spelling, terms, and symbols is consistent and precise.

Aspects	Indicator
	- The material is presented in accordance with the intellectual and social development of students as well as the context of daily life.

Source: Modified from Arsyad, (2020)

The media expert validation focused on presentation and graphic design aspects to assess the visual quality and ease of use of the E-Flipbook in the learning process. The evaluation covered layout, color usage, font selection, image quality, the completeness of interactive features, and ease of navigation. This evaluation aims to ensure that the developed media is not only appropriate in terms of content but also engaging and easy to use for elementary school students. The evaluation indicators in the media expert instrument are presented in Table 2.

Table 2. Media Expert Instrument Grid

Aspects	Indicator
Presentation Eligibility	- The material is presented in a well-organized and sequential format to facilitate students' understanding.
	- The content is presented through a balanced combination of text, visuals, and learning activities.
	- The media is equipped with interactive features and supporting parts that support the completeness of the content.
Graphic Qualification	- The media display has an easy-to-use design.
	- The use of letters is clear, legible, and in accordance with the characteristics of elementary school students.
	- Illustrations and visual elements are relevant and help improve understanding of the material.

Source: Modified from Arsyad, (2020)

The evaluation results obtained from the subject matter experts and media experts were interpreted using validation criteria to determine the feasibility and suitability of the developed E-Flipbook learning media. These criteria were used as guidelines to classify the product into the categories of highly suitable, suitable, somewhat suitable, or unsuitable for use in the learning process. Through this assessment, the researchers were able to identify the overall quality and effectiveness of the developed media. In addition, the evaluation results provided important feedback for improving and refining the E-Flipbook before broader implementation. The use of these validation criteria also ensured that the assessment process was conducted systematically and objectively. The validation criteria used by the subject matter experts and media experts can be seen in Table 3.

Table 3. Criteria for Assessment of Validation of Material and Media Experts

Percentage score	Criteria
82% < score ≤ 100%	Well worth it
63% < score ≤ 81%	Worthy
44% < score ≤ 62%	Quite Decent
25% < score ≤ 43%	Not Eligible

Source : Sugiyono, (2019 : 169)

3. Results and Discussion

Results

The development of *E-Flipbook* learning media for IPAS material on the topic of community life in the local area for fourth-grade elementary school students was carried out using a research and development approach based on the Borg & Gall model. This model consists of eight systematic stages, namely (1) potential and problems, (2) data collection, (3) product design, (4) design validation, (5) design revision, (6) product trials, (7) product revision, and (8) trial use. Each of these stages was implemented in a structured and sequential manner to ensure that the developed learning media meets the required standards in terms of content accuracy, design quality, and practical usability in classroom learning. Furthermore, the application of this development model allows the product to be continuously refined through iterative revisions based on expert validation results and findings obtained during trial activities, so that the final product becomes more effective, valid, and appropriate for use in supporting student learning processes in elementary education.

Potential and Problems

Social studies learning in fourth grade at SD Negeri 1 Wolo faces several obstacles that affect student learning outcomes. The material is relatively dense and complex, making it difficult for some students to understand, while student engagement in classroom activities remains low, as some tend to lose focus, work individually, or have difficulty interacting with peers. The teaching methods used are still dominated by lectures and printed textbooks, and classroom conditions are not very supportive, which limits learning effectiveness. Based on interviews with teachers, the use of interactive learning media is still very limited, as the learning process mainly relies on thematic pictures and textbooks without additional supporting media. This situation results in students' mastery of the material being less than optimal. Learning achievement data show that out of 35 students, only 10 students or about 29% have met the Learning Goal Achievement Criteria, while 25 students or about 71% have not yet achieved it.

Data Collection

The analysis of teachers and students needs was conducted as the initial stage to gather information that would serve as the foundation for developing *E-Flipbook* learning media in IPAS subjects. Data were collected by distributing questionnaires to fourth-grade teachers and all students, as well as conducting interviews with teachers to identify challenges encountered during the learning process and the necessity of using learning media. The questionnaire results indicated that although teachers had already used certain learning media in classroom activities, more innovative and interactive media were still required to support students' understanding of IPAS material. Meanwhile, students also expressed the need for more engaging learning media in order to increase their participation during the learning process. These findings were then used as the basis for designing *E-*

Flipbook media that aligns with the characteristics of fourth-grade students and their learning needs. Additionally, documentation of students' learning outcomes and a review of relevant literature on IPAS materials and digital media development were also considered to ensure that the developed product is relevant, meets learning requirements, and effectively supports the learning process.

Product Design

The E-Flipbook learning media on the topic Life of the People of My Region in the IPAS subject for fourth-grade elementary school students was developed as an interactive digital medium designed to make learning more engaging and easier to understand. This media is presented as an electronic book with a digital page-flipping feature, providing a more varied and interactive learning experience compared to conventional printed books. The development process was adapted to the characteristics of fourth-grade students by organizing the content systematically, using simple and clear language, and adding relevant images and illustrations to support understanding. In the design stage, Canva was used to arrange layouts, select colors, and develop structured content with supporting visuals.

The design was then converted using Flip Builder to produce an interactive digital book with a realistic page-turning effect that makes learning more engaging. To increase student involvement, the media was also equipped with interactive games related to the learning content, allowing students to learn while playing in a meaningful way. The final product was published through the Flip Builder platform so it can be accessed via computers, laptops, and smartphones, enabling both classroom and independent learning. The preliminary design of the Flip Builder-based E-Flipbook prior to revision is shown in Figure 2, and the media can be accessed through the provided link.



Figure 2. The initial design of the E-Flipbook before revision

Access link : <https://mediaflipbook.my.id/eflipbookdaerahku/index.html>

The procedures carried out by the researcher in designing the product consist of a series of structured stages intended to create an effective and engaging E-Flipbook as a learning medium. (1) Developing the E-Flipbook manuscript by arranging the learning content, selecting suitable formats, and designing page layouts that are aligned with students' needs and characteristics, so that the material is presented in a clear, well-organized, and visually appealing manner, while also sequencing the content logically to enhance understanding and support meaningful learning experiences. (2) Designing interactive games to be integrated into the E-Flipbook, which aim to improve student engagement, boost motivation, and encourage active participation, as well as strengthen their comprehension of the material in a more enjoyable and interactive way. (3) Employing the Canva application, particularly the Flip Builder feature, to transform the prepared content into an interactive digital E-Flipbook that combines text, images, and interactive components within a cohesive and user-friendly design, thereby producing a final product that is more attractive, easily accessible, and effective in supporting interactive learning activities.

Design Validation

The feasibility of the E-Flipbook learning media on the topic Life of the Community in the surrounding community was evaluated by both material experts and media experts from the Elementary School Teacher Education Study Program at the State University of Semarang. The evaluation used a questionnaire based on a Likert scale, which was designed in accordance with the characteristics of digital learning media and the needs of the learning process. Several aspects were assessed in this evaluation, including the alignment of the material with the learning outcomes of fourth-grade IPAS, the accuracy of the concepts presented, the completeness and organization of the content, the clarity of the language used, and the appropriateness of the examples and illustrations provided.

Design Revision

The E-Flipbook was evaluated by subject matter experts based on content and linguistic appropriateness, including the alignment of the material with Learning Outcomes, Learning Objectives, conceptual accuracy, clarity of presentation, appropriateness of examples, and the use of language that is easily understood by elementary school students. This evaluation is conducted to determine the level of content suitability of the material presented in the E-Flipbook before it is pilot-tested with students. Based on Table 4, an overall score of 97 out of a maximum of 100 was obtained, representing a percentage of 97% and falling into the "Highly Acceptable" category. In terms of presentation suitability, a percentage of 95.8% was obtained, falling into the "Highly Suitable" category, while in terms of linguistic suitability, a percentage of 98% was obtained, also falling into the "Highly Suitable" category. The results of the subject matter experts' validation of the *E-Flipbook* learning media for the "Life in My Community" material can be seen in Table 4.

Table 4. Summary of Content Validation for the E-Flipbook Learning Resource on Community Life in My Region

Feasibility Aspects	Score obtained (F)	Maximum Score (N)	Percentage	Criteria
Presentation Feasibility	46	48	95,8%	Well worth it
Linguistic Acceptability	51	52	98%	Well worth it
Overall Percentage	97	100	97%	Well worth it

Source: Research data processed with SPSS Version 29

These results indicate that the material in the E-Flipbook aligns with the learning objectives, is organized systematically, and uses language that is communicative and easily understood by elementary school students. Additionally, the presented material aligns with the learning outcomes for Grade 4 Social Studies (IPAS), thereby aiding students in understanding the social life of their local community. The subject matter expert recommended adding references to the presented material to strengthen the theoretical foundation and enhance the accuracy of the information. Following revisions based on the validator's suggestions, the E-Flipbook learning medium was deemed suitable for pilot testing with students. Media expert validation was conducted to determine the suitability of the E-Flipbook learning media in terms of presentation and graphics before it was tested on students. This assessment covered the media's appearance, layout, use of color, font type, image quality, ease of navigation, and level of interactivity. The results of the media expert validation of the E-Flipbook learning media on the topic of Community Life in My Region can be seen in Table 5.

Table 5. Summary of Media Validation for the E-Flipbook Learning Resource on the Social Life of My Region

Feasibility Aspects	Score obtained (F)	Maximum Score (N)	Percentage	Criteria
Presentation Feasibility	58	60	96,6%	Well worth it
Graphical feasibility	80	80	100%	Well worth it
Overall Percentage	98	100	98%	Well worth it

Source: Research data processed with SPSS Version 29

Design Revision

Following the evaluation of the E-Flipbook learning media by material and media experts, several recommendations and suggestions were provided to improve both the visual appearance and functional aspects of the product. The revisions carried out included redesigning the cover layout to make it more attractive and suitable for elementary school students, replacing foreign terms with more appropriate and

understandable language, adding watermarks to the instructional videos to enhance product identity and originality, and integrating navigation features in the form of an interactive table of contents to facilitate easier access and exploration of the learning materials by students. These improvements were intended to increase the usability, clarity, and effectiveness of the E-Flipbook as a learning medium. The revised version of the E-Flipbook based on the suggestions and input from the experts is presented in Figure 3.




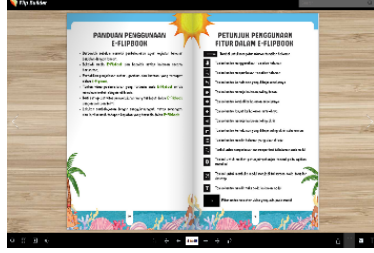


Before Revision	After Revision
	
<p>The author's name must be listed at the beginning, and the font used must be specified</p>	
	
<p>More comprehensive features need to be added to E-Flipbook to support the learning process.</p>	
	
<p>The logo was added to the educational video to reinforce the identity and quality of the educational media.</p>	

Figure 3. The revised E-Flipbook based on suggestions from material and media experts

Product Trials

The small-scale trial of the E-Flipbook learning media was conducted with thirteen fourth-grade students at SD Negeri 2 Wolo using the learning material Life of the People of My Region. This stage was carried out to evaluate the feasibility and effectiveness of the developed media before proceeding to a larger-scale

implementation. The trial process involved applying the E-Flipbook in classroom learning activities so that students could directly interact with the media and experience its use in understanding the material. After the learning process was completed, both teachers and students were asked to fill out response questionnaires as an evaluation form to assess the quality, practicality, and attractiveness of the developed media. The collected responses were then analyzed and summarized to provide an overview of user perceptions toward the E-Flipbook learning media, and the recapitulation of these results from both teachers and students is presented in Table 6.

Table 6. Recapitulation of Teacher and Student Responses toward the E-Flipbook Learning Media

Respondent	Percentage	Criteria
Students' Responses	95%	Well worth it
Teacher Responses	93%	Well worth it

Source: Research data processed with SPSS Version 29

The findings from the small-scale trial indicated that the E-Flipbook learning media received highly positive responses from both students and teachers, demonstrating its potential as an effective instructional medium in classroom learning. The evaluation results showed that student responses reached 95% and teacher responses reached 93%, both categorized as highly feasible. In terms of design and presentation, the media was considered visually attractive, easy to operate, and suitable for the characteristics and learning needs of fourth-grade students. In addition, the interactive features contained in the media supported student engagement, encouraged active participation during learning activities, and enhanced students' understanding of the presented material through more meaningful and contextual learning.

Product Revision

At the product improvement stage, the researcher revised the audio components of the E-Flipbook learning media. The previous audio was replaced with sound that is clearer, more fluent, and more comfortable to listen to in order to support the effective delivery of the material. In addition, adjustments were made to the volume and sound quality so that they are well aligned with the visual elements and do not distract students during the learning process. These revisions aim to enhance the overall quality of the learning media and to create a more comfortable and effective learning environment. Moreover, the improvement of the audio aspects was carried out by taking into account the characteristics of elementary school students, who generally respond better to clear articulation and consistent sound quality. The synchronization between narration and visual presentation was also refined to ensure that the material can be understood more easily without causing excessive cognitive load.

Trial Use

A large-scale implementation trial was conducted at SD Negeri 1 Wolo involving 35 fourth-grade students. This stage aimed to determine the feasibility and effectiveness of the E-Flipbook learning media after previously undergoing a small-scale trial. The E-Flipbook was used during the IPAS learning process on the topic of community life in the local area. After the learning activities were completed, both the teacher and all participating students were asked to complete response questionnaires to evaluate the developed learning media. The questionnaire results were then compiled to identify the responses of teachers and students toward the use of the E-Flipbook learning media. The recapitulation results of teacher and student responses can be seen in Table 7.

Table 7. Recapitulation Results of Teacher and Student Responses toward the E-Flipbook Learning Media

Respondent	Percentage	Criteria
Students' Responses	93%	Well worth it
Teacher Responses	97%	Well worth it

Source: Research data processed with SPSS Version 29

The large-scale trial results showed that the E-Flipbook learning media received very positive responses from users. Students gave a response percentage of 93%, while the teacher gave 97%, both categorized as highly feasible. The media was considered attractive, easy to use, suitable for the characteristics of fourth-grade students, and effective in supporting interactive learning and students' understanding of IPAS concepts. The final stage of this research was the implementation of a large-scale usage test after the small-scale trial showed an improvement in the average pretest and posttest scores. This stage involved 35 students. Before conducting further analysis, a prerequisite test in the form of a normality test was carried out to determine whether the data were normally distributed. The normality test was conducted using SPSS version 29 for Windows with the Shapiro-Wilk method, and the normality test results are presented in Table 8.

Table 8. Normality Test Results of Small & Large Scale Pretests and Posttests

Variable	Shapiro-Wilk Statistics	df	Sig.	Remarks
Small Scale Pretest	0,945	13	0,524	Normally Distributed
Small Scale Posttest	0,899	13	0,128	Normally Distributed
Large-Scale Pretest	0,961	35	0,244	Normally Distributed
Large-Scale Posttest	0,952	35	0,130	Normally Distributed

Source: Research data processed with SPSS Version 29

The results of the normality analysis using the Shapiro-Wilk test in both small-scale and large-scale trials showed that the data were generally normally distributed, as indicated by significance values above 0.05. Although the pre-test results in the large-scale trial showed a value below 0.05, the normality assumption was still

based on the Shapiro-Wilk test because the sample size was fewer than 50 respondents. Therefore, the data met the requirements for further analysis using parametric statistical methods. A paired sample t-test was then conducted to examine the differences between pre-test and post-test mean scores in order to determine changes in students learning outcomes after the implementation of the E-Flipbook learning media. The analysis was carried out using SPSS Statistics. The results indicated that if the significance value was less than 0.05, the hypothesis was accepted, showing an improvement in learning outcomes, while a value greater than 0.05 indicated no significant improvement. The results of the t-test analysis are presented in Table 9 below.

Table 9. Paired Sample Test Results Small & Large Scale

Variable	Red Pretest	Mean Posttest	Mean Difference	T	df	Sig. (2- tailed)	Remarks
Small-Scale Learning Outcomes	56,54	85,38	-28,85	- 8,249	13	< 0.001	There is a significant difference
Large-Scale Learning Outcomes	60,71	83,43	-22,71	- 8,074	35	< 0.001	There is a significant difference

Source: Research data processed with SPSS Version 29

The paired sample t-test was applied to examine the difference in the average learning outcomes of students before and after the implementation of E-Flipbook based learning media, using a significance level of 0.05. In the small-scale trial, the mean pretest score was 56.54, while the mean posttest score increased to 85.38. The analysis produced a t-value of -8.249 with a significance level of <0.001, indicating a significant difference between the two scores. Similarly, in the large-scale trial, the average pretest score was 60.71 and the average posttest score reached 83.43. The calculated t-value was -8.074 with a significance level of <0.001, which also demonstrated a significant difference in learning outcomes before and after the treatment. Following this analysis, the data were further examined using the N-Gain calculation to measure the level of improvement in students' learning outcomes. This calculation was performed by comparing the difference between the pretest and posttest scores and then normalizing it against the maximum possible score. The results of the N-Gain analysis are presented in Table 10 below.

Table 10. Small & large scale N-Gain Test Results

Scale	Average Pretest	Pretest Categories	Posttest Average	Posttest Categories	N- Gain	N-Gain Category
Small	56,54	Enough	85,38	Excellent	0,6517	Medium
Large	60,71	Enough	83,43	Excellent	0,5288	Medium

Source: Research data processed with SPSS Version 29

The results of the N-Gain analysis indicate that, in the small-scale trial, the students' average pretest score was 56.54, which falls into the sufficient category, and it increased to 85.38 in the posttest, categorized as very good. The calculated N-Gain value was 0.6517, which is included in the moderate improvement category. In the large-scale trial, the average pretest score of 60.71 (sufficient category) increased

to 83.43 in the posttest (very good category), producing an N-Gain value of 0.5288 that also falls within the moderate category. These results demonstrate that the *E-Flipbook* based learning media contributed to improving students' learning outcomes in both trials, with an effectiveness level classified as moderate.

Discussion

The development of E-Flipbook learning media for fourth-grade IPAS materials was carried out through systematic research and development stages, including needs analysis, product design, expert validation, revision, and implementation in learning activities. These stages are in line with the research and development concept, which emphasizes a structured process from identifying needs to testing product feasibility and effectiveness (Sugiyono, 2019). Through this process, the media is gradually improved based on expert feedback and trial results to ensure its effectiveness in supporting learning. The structured development ensures that the media aligns with the characteristics of elementary school students and is suitable for classroom use (Rahayu, 2025). In addition, E-Flipbook media designed according to students' needs helps present learning materials that are more relevant and easier to understand (Zahra et al., 2024). Therefore, this media is intended to support learning activities and improve students' comprehension. The use of digital E-Flipbook also provides a more interesting learning experience compared to conventional media as it supports interactive learning and active student involvement (Hamidah & Asrohah, 2025).

The combination of these elements makes learning more varied and less monotonous, so students do not easily feel bored. Direct student involvement in using the media can increase learning interest and deepen understanding because students can explore concepts and connect them with prior knowledge. According to (Aprilia et al., 2024) interactive E-Flipbook design encourages active student engagement through direct exploration of materials. In this study, the E-Flipbook for fourth-grade IPAS is designed with features that support interaction and active learning. The shift from print to digital media also creates a more dynamic learning process and adapts to students' learning needs (Velinda et al., 2024).

From the aspect of feasibility, the E-Flipbook has been validated by material and media experts to ensure content accuracy, language clarity, systematic presentation, and attractive design. Validation is an important stage in development research to determine product feasibility before use (Kaamilah et al., 2023). The structured display and simple navigation help students use the media more easily. Its effectiveness is shown by improvements in student learning outcomes after implementation. Rahmawati et al., (2025) state that Flipbook not only improves learning outcomes but also increases motivation and responsibility. Students show higher scores, more active participation, and greater enthusiasm in learning activities.

The use of E-Flipbook can be explained through cognitivism learning theory, which emphasizes mental processes in receiving and processing information. Learning involves connecting new knowledge with prior understanding to build

deeper concepts (Nurhayati et al., 2025). In this process, learning media supports cognitive activity. E-Flipbook enables independent exploration of materials. This helps students understand concepts and retain information in long-term memory. The media also includes structured materials, illustrations, and exercises to support understanding.

The application and development of E-Flipbook media in learning activities has a positive impact on the student learning process. This media is able to present learning materials in a more interesting, neatly arranged, and interactive way, thus helping students understand concepts more easily. In addition, the variety of visual appearance and structured material arrangement also increase students' interest and active participation during learning activities. Thus, E-Flipbook can be used as an innovative learning medium that supports improving the quality of the learning process and student learning outcomes at the elementary school level. Various additional features, such as interactive illustrations, short videos, animations, and self-evaluation exercises, allow students to study more actively and review the material according to their needs. This media also provides opportunities for teachers to provide direct feedback, monitor student learning progress, and adjust the material to the abilities of each student. In addition, E-Flipbook provides flexibility for students to learn independently outside of class hours, so that learning activities are not limited to just classrooms. The use of digital media is in line with technological advances and the learning style of the current generation, which is more responsive to interactive and visual-based materials.

4. Conclusion

This study aimed to develop an E-Flipbook based learning media for the IPAS subject on the topic My Regional Community Life for fourth-grade elementary school students and to examine its feasibility and effectiveness in improving learning outcomes. The development process was carried out through several stages, including needs analysis, product design, expert validation, revision, and implementation in the learning process. The results of the study show that the developed E-Flipbook has a clear structure, an attractive design, and interactive features that support students in understanding the material more effectively. The use of this media also encourages greater student participation and engagement during learning activities, as well as promotes more independent learning. Compared to conventional learning media, the E-Flipbook provides a more varied and meaningful learning experience for students. Based on these findings, it can be concluded that the E-Flipbook developed in this study is feasible and effective for use in elementary school learning, particularly in the IPAS subject. Therefore, the research can be considered successful in achieving its objectives. For future research, the development of similar digital media can be expanded to other learning materials and enhanced with more diverse interactive features to support innovative and technology-based learning.

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