Journal of Educational Sciences
Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES

P-ISSN 2581-1657
E-ISSN 2581-2203

# Development of Arfi Book Digital Flipbook Learning Media for IPAS Subjects on Traditions and Cultures of the Community Around Me to Improve Learning Outcomes of Fourth-Grade Elementary School Students

**Arina Nur Salsabila*, Kurniana Bektiningsih**
*Elementary School Teacher Education, Faculty of Education and Psychology, Semarang State University, Semarang, 50229, Indonesia*

**ARTICLE INFO**

*Article history*:

Received: 19 Jan 2026
Revised: 09 March 2026
Accepted: 25 March 2026
Published online: 05 April 2026

*Keywords:*

Digital Flipbook,
Elementary School Science,
Local Culture,
Learning Outcomes

** Corresponding author:*

E-mail:
arinasalsabila12521@students.unnes.ac.id

*Article Doi:*

https://doi.org/10.31258/jes.10.4.p.145-155



**A B S T R A C T**

This study aimed to develop and assess the feasibility and effectiveness of ArfiBook, a digital flipbook-based learning media, for teaching IPAS on Traditions and Cultures of the Community Around Me to fourth-grade elementary students. The research employed a Research and Development (R&D) approach, which included stages of needs analysis, media design, development, expert validation, limited-scale trial, and effectiveness testing. Data were gathered through expert evaluation sheets, teacher and student response questionnaires, and pretest-posttest assessments. Analysis focused on media feasibility, practicality in classroom use, and the impact on students' learning outcomes. The findings revealed that ArfiBook was highly feasible according to both media and subject matter experts and was well-received by teachers and students, indicating strong practicality. Moreover, students' learning outcomes showed a notable improvement after using the media, demonstrating its effectiveness in supporting IPAS learning. The study concludes that ArfiBook serves as a practical, feasible, and effective learning tool that can enhance engagement and comprehension in elementary school IPAS lessons, offering an innovative approach that aligns with digital learning trends and the need for interactive, student-centered instructional materials.

## 1. Introduction

Education is a conscious effort by society and government to prepare future generations with the cognitive, spiritual, and psychomotor competencies needed to navigate cultural, national, and global contexts (Purwaningsih et al., 2022). In today's digital era, rapid technological advancements have transformed many

aspects of human life, including education, where digital tools are no longer merely supplementary but central to how knowledge is constructed, communicated, and assessed. For elementary students, interactive, visual, and experiential learning is crucial, and educators face the challenge of developing media that are pedagogically sound, culturally relevant, and tailored to learners' needs. Without systematic development, the mere presence of technology in classrooms does not guarantee meaningful learning improvements.

Digital flipbooks have emerged as a promising innovation, transforming conventional printed materials into interactive media that integrate text, images, audio, video, and animations (Riady, 2021). Unlike static textbooks or slide presentations, flipbooks allow non-linear exploration, aligning with elementary students' curiosity and promoting self-directed learning. Studies show that flipbook-based materials enhance engagement and higher-order thinking skills (Fardinelly et al., 2024) and improve understanding in IPAS subjects when culturally contextualized (Syahrir et al., 2025). In elementary IPAS learning, which covers social, cultural, and environmental content, conventional methods often disconnect material from students' experiences, reducing motivation and comprehension. Technology-based tools, including interactive worksheets and AI-supported media, have been shown to increase engagement and critical thinking (Harmoni & Handayani, 2025; Rahayu et al., 2025). These findings highlight that instructional design quality, not mere technology adoption, drives learning effectiveness.

Despite evidence supporting digital media, culturally grounded digital flipbooks for IPAS remain limited. Most studies focus on general content or specific skills, neglecting local cultural integration. Research indicates that gamified, culture-based media can enhance motivation and learning retention (Azmi et al., 2025), and learner-centered modules that account for local characteristics foster more effective IPAS instruction (Musfita et al., 2025). Preliminary observations at Sadeng 02 Public Elementary School revealed that Grade IV IPAS learning relied heavily on lectures with simple PowerPoint and video support, leading to low engagement and minimal contextual understanding. Systematically developed digital media that are culturally and curriculum-aligned can scaffold comprehension, increase participation, and improve teaching effectiveness (Imran et al., 2025; Larissa et al., 2026).

The gap between the pedagogical potential of digital flipbooks and their limited application in culturally grounded IPAS learning frames the research problem addressed in this study. While interactive digital media have demonstrated effectiveness across contexts, their systematic development and validation for IPAS topics centered on local traditions remain underexplored, particularly within the Merdeka Curriculum. Studies indicate that integrating learner-centered, contextually relevant design enhances both participation and learning outcomes (Sakinah et al., 2025). This study addresses this gap by developing ArfiBook, a digital flipbook specifically designed for Grade IV IPAS learning on Traditions and Cultures of the Community Around Me, combining interactive multimedia with local cultural content to create an engaging, pedagogically robust learning

experience. The study aims to assess the feasibility, practicality, and effectiveness of ArfiBook in improving elementary students' IPAS learning outcomes at Sadeng 02 Public Elementary School.

## 2. Methodology

### *Research Design and Model*

This study employed a Research and Development (R&D) approach using the Borg & Gall (1983) model, which provides a systematic and iterative framework for designing, developing, and validating educational products before classroom implementation (Gustiani, 2019). The development process began with a needs analysis to identify learning requirements, student characteristics, and existing instructional conditions. This was followed by media design, in which the structure, content, and interactive multimedia elements of ArfiBook were planned. A prototype of the digital flipbook was then developed and subjected to expert validation by one media expert and one subject matter expert, who assessed feasibility, content accuracy, visual presentation, and curriculum alignment. Feedback from the experts guided revisions to refine the prototype. Subsequently, a limited-scale trial was conducted with a small group of students to evaluate usability, clarity, and attractiveness, after which the media was further revised based on the trial outcomes. Finally, ArfiBook was implemented at a larger scale in the classroom, and its effectiveness and practicality were assessed through pretests, posttests, and teacher and student response questionnaires. This model ensures iterative improvement, learner-centered design, and empirical validation at each stage (Afriani, 2025; Jami et al., 2025).

### *Research Subjects*

The research subjects were 24 fourth-grade students at Sadeng 02 Public Elementary School during the 2024/2025 even semester. Grade IV students were selected because the IPAS topic, Traditions and Cultures of the Community Around Me, is a core component of the Merdeka Curriculum, and students at this stage benefit from concrete, visual, and interactive media that bridge abstract cultural concepts with familiar experiences. Prior classroom observations were conducted to understand existing instructional conditions, student characteristics, and learning barriers.

### *Instrument Development and Validation*

Data collection instruments included media expert validation sheets, subject matter expert validation sheets, teacher and student response questionnaires, and pretest-posttest assessments of learning outcomes. Validation sheets were developed based on established criteria covering language clarity, visual quality, material accuracy, curriculum alignment, and developmental appropriateness. All instruments were reviewed by experts in educational technology and elementary curriculum to ensure

content validity. Teacher and student questionnaires were also validated for clarity, relevance, and reliability to ensure accurate data collection.

### *Data Analysis*

Data collection proceeded in stages, beginning with expert validation to improve the prototype, followed by limited-scale trials to evaluate media usability and attractiveness. Large-scale implementation involved administering pretests before and posttests after the use of ArfiBook to measure learning improvements, alongside teacher and student response questionnaires to assess overall practicality. Media feasibility and practicality data were analyzed using percentage calculations: NP = (R / M) × 100%, where R is the obtained score and M is the maximum score. Learning outcome data were analyzed through Shapiro-Wilk normality testing, paired sample t-tests to determine statistical significance, and N-Gain calculations to quantify the magnitude of improvement, with results classified according to standard effectiveness criteria.

## 3. Results and Discussion

### *Results*

### *Media Development*

The primary outcome of this research is ArfiBook, a digital flipbook-based learning medium designed to support Grade IV IPAS learning on Traditions and Cultures of the Community Around Me. ArfiBook organizes content in a structured, sequential, and visually engaging format tailored to elementary students' cognitive and developmental characteristics, considering language, layout, and material presentation (Afriani, 2025). The medium integrates a cover page, learning objectives, structured material, supporting illustrations, local cultural videos, audio narration, and interactive evaluation exercises. Figures 1, 2, and 3 illustrate ArfiBook's interface, showing its front view, content display, and cover page, respectively. The design emphasizes interactivity and visual clarity to maximize student engagement and comprehension.

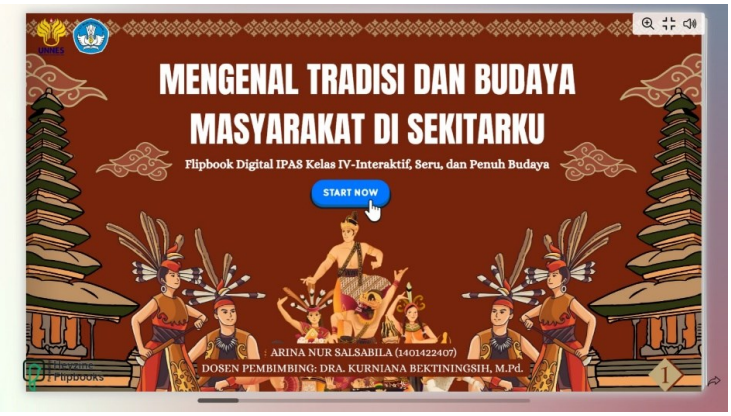


Figure 1. ArfiBook Media Front View


Figure 2. ArfiBook Media Content Display


Figure 3. ArfiBook Media Cover Display

## *Feasibility Test*

ArfiBook's feasibility was evaluated through validation by a media expert and a subject matter expert before classroom implementation. Table 1 shows that the media expert assigned a total score of 74, corresponding to 92% feasibility, indicating that ArfiBook met technical and visual quality standards, including language clarity and presentation structure. Similarly, subject matter expert validation in Table 2 yielded a score of 77 (96.25%), confirming strong alignment with the Merdeka Curriculum, accurate integration of cultural content, and developmental appropriateness for Grade IV learners. These results suggest that ArfiBook is both technically sound and pedagogically suitable for elementary IPAS instruction.

Table 1. Media Expert Validation Results

| No | Presentation Component Indicators | Score |
|---|---|---|
| 1 | Assessment of the Feasibility of Language Aspects | 18 |
| 2 | Assessment of the Feasibility of Presentation Aspects | 18 |
| 3 | Feasibility Assessment of Media Influence on Learning Strategies | 18 |
| 4 | Comprehensive Appearance Suitability Assessment | 20 |
| | Total Score | 74 |
| | Percentage | 92% |
| | Criteria | Very Feasible |

Table 2. Subject Matter Expert Validation Results

| No | Presentation Component Indicators | Score |
|---|---|---|
| 1 | Suitability with the Merdeka Curriculum | 16 |
| 2 | Accuracy of content on Traditions and Culture of the Community Around Me | 15 |
| 3 | Suitability with students' maturity and abilities | 14 |
| 4 | Quality of material presentation in ArfiBook | 16 |
| 5 | Accuracy of language and images used | 16 |
| | Total Score | 77 |
| | Percentage | 96.25% |
| | **Criteria** | **Very Feasible** |

The small-group trial, as presented in Table 3, demonstrates that ArfiBook received an average practicality rating of 86.4%, categorized as very practical across aspects such as media appearance, ease of use, clarity, attractiveness, and perceived benefit. These findings indicate that the medium is usable in authentic classroom conditions, with students responding positively to its visual design, intuitive navigation, and clear material presentation. The integration of multimedia text, images, video, audio, and interactive quizzes creates a multimodal learning environment that enhances engagement and motivation, consistent with Rahmawati et al. (2023).

Table 3. Small-Group Trial Response Questionnaire Results

| No | Assessed Aspect | Percentage | Category |
|---|---|---|---|
| 1 | Media Appearance | 85% | Very Practical |
| 2 | Ease of Use | 88% | Very Practical |
| 3 | Clarity of Material | 82% | Very Practical |
| 4 | Media Attractiveness | 90% | Very Practical |
| 5 | Benefits of Media | 87% | Very Practical |
| | **Average** | **86.4%** | **Very Practical** |

Pretest and posttest normality checks, shown in Table 4, confirmed that both datasets met the normality assumption. Subsequent paired sample t-tests (Table 5) revealed a statistically significant increase in scores from a mean of 64.5 to 89.5 ($p < 0.001$), while the N-Gain analysis (Table 6) yielded a score of 73.59%, categorized as high and effective. These results indicate substantial improvement in student learning outcomes, attributable to increased engagement, interactive exploration of material, and culturally contextualized content. Students were able to self-assess understanding and revisit concepts independently, reflecting the characteristics of effective digital flipbook media as identified by Prasasti and Anas (2023).

Table 4. Normality Test Results

| Test | Statistics | df | Sig. | Criteria |
|---|---|---|---|---|
| Pretest | .968 | 24 | .627 | Normal |
| Posttest | .956 | 24 | .359 | Normal |

Table 5. Paired Sample T-Test Results

| Test | N | Mean | Sig. (2-tailed) | Information |
|---|---|---|---|---|
| Pretest | 24 | 64.5 | .000 | $H_0$ rejected, $H_a$ accepted |
| Posttest | 24 | 89.5 | | |

Table 6. N-Gain Test Results

| N | Mean Pretest | Mean Posttest | N-Gain (%) | Category |
|---|---|---|---|---|
| 24 | 64.5 | 89.5 | 73.59 | Effective |

Post-implementation response questionnaires (Table 7) show that teachers and students rated ArfiBook very positively, with scores of 95% and 97.7%, respectively. Teachers reported that the medium facilitated systematic, contextually appropriate, and student-responsive instruction, reducing reliance on lecture methods. Students expressed high interest, motivation, and confidence in engaging with IPAS content. These results align with Fikriansyah et al. (2023), who highlighted the motivational impact of interactive digital flipbooks, and extend previous findings by showing that anchoring media in local cultural content enhances engagement and learning effectiveness, making cultural relevance a core driver rather than a supplementary feature.

Table 7. Teacher and Student Response Questionnaire Results

| Response | Score Obtained | Maximum Score | Percentage | Category |
|---|---|---|---|---|
| Teacher | 38 | 40 | 95% | Very Good |
| Students | 938 | 960 | 97.7% | Very Good |

Overall, the findings confirm that ArfiBook is a feasible, practical, and effective instructional tool, integrating pedagogical rigor with cultural contextualization to improve learning outcomes, student motivation, and teacher instructional capacity in elementary IPAS education.

## *Discussion*

The high feasibility scores obtained from both media and subject matter expert validation reflect that ArfiBook successfully meets the pedagogical and technical standards required for effective elementary school instructional media. The strong performance in language clarity, visual presentation, and curriculum alignment indicates that the development process, guided by systematic expert validation and iterative revision, produced a medium that is both technically sound and educationally appropriate. These findings are consistent with those of Amalia and Fathurrahman (2023), who demonstrated that digital flipbook media achieved very high feasibility ratings in elementary social studies contexts. However, the present study extends this finding by incorporating local cultural content in the form of

videos, illustrations, and quizzes centered on community traditions, a dimension not fully explored in prior flipbook development studies. This culturally contextual design is theoretically grounded in the principle that learning becomes more meaningful when students can connect new concepts to their existing social experiences and immediate environments (Juliani & Ibrahim, 2023).

The very practical rating achieved in the small-group trial, averaging 86.4% across all assessed dimensions, demonstrates that ArfiBook is not only theoretically feasible but genuinely usable by its intended target users in authentic classroom conditions. Students responded positively to the media's visual attractiveness, ease of navigation, and the clarity with which material was presented, indicating that the design succeeded in addressing the cognitive and motivational characteristics of fourth-grade learners. This finding aligns with Rahmawati et al. (2023), who emphasized that visually well-designed digital learning media reduces cognitive load and maintains student attention, thereby facilitating deeper engagement with content. Importantly, the practicality finding also highlights that the integration of multimedia elements, namely text, images, video, audio, and interactive quizzes, within a single cohesive platform creates a richer learning experience than any single modality could provide independently. This multimodal quality is precisely what differentiates ArfiBook from conventional instructional media and positions it as a more contextually responsive and engaging pedagogical tool.

The statistically significant improvement in learning outcomes, evidenced by the paired sample t-test result and an N-Gain score of 73.59% in the high category, provides robust empirical confirmation of ArfiBook's effectiveness in improving IPAS learning outcomes. This improvement is attributable to the combined effect of increased student engagement, more active participation in the learning process, and the contextual grounding of cultural content within familiar local frameworks. Students were able to interact with the material independently and exploratively, using embedded quizzes and multimedia elements to self-assess their understanding and revisit content as needed. These instructional conditions align with what Prasasti and Anas (2023) identified as the defining characteristics of effective contextual digital flipbook media, namely the presentation of material that is closely tied to students' lived experiences, thereby supporting deeper and more durable learning. The effectiveness finding also reinforces the broader literature on digital media integration in elementary education, which consistently demonstrates that appropriately designed interactive media improves both the quality and quantity of student learning in comparison to conventional instructional approaches.

The very good teacher and student response scores, reaching 95% and 97.7% respectively, confirm that ArfiBook was well-received not only as a feasible development product but as a practical and effective instructional tool in the actual classroom environment. Teachers reported that ArfiBook helped them deliver material in a more systematic, contextually appropriate, and student-responsive manner, reducing reliance on lecture-based methods and enabling greater differentiation in instructional delivery. Students demonstrated high enthusiasm throughout the learning process, reporting greater interest, motivation, and confidence in engaging with the IPAS content. These response patterns are

consistent with Fikriansyah et al. (2023), who documented that digital flipbook media increases student involvement and motivation by presenting material in an interactive, non-monotonous format. However, this study extends prior findings by demonstrating that this motivational effect is particularly pronounced when digital media are anchored in local cultural content that students recognize and value, suggesting that cultural relevance is not merely a supplementary feature but a core driver of student engagement and learning effectiveness in elementary IPAS instruction.

## 4. Conclusion

This study successfully developed ArfiBook, a digital flipbook-based learning medium for Grade IV IPAS instruction on Traditions and Cultures of the Community Around Me, and evaluated its feasibility, practicality, and effectiveness through a systematic Research and Development process. The findings indicate that ArfiBook meets the standards for quality elementary instructional media, demonstrating alignment with the curriculum, clarity of language, appropriate visual design, and suitability for students' developmental level. Teachers and students responded positively to the media, recognizing it as engaging, user-friendly, and contextually relevant, which supports more effective learning compared to conventional instructional tools. The implementation of ArfiBook also fostered meaningful learning experiences, enabling students to interact with cultural content actively, explore material independently, and deepen their understanding of IPAS concepts.

The successful development and application of ArfiBook highlight that digital learning media, when designed with pedagogical intentionality and cultural sensitivity, can significantly enhance the quality of elementary education. Nevertheless, this study is limited to a single IPAS topic and a specific classroom context, suggesting the need for further research to apply ArfiBook to other subject areas, test its effectiveness across diverse student populations, and examine its long-term impact on students' cultural awareness and higher-order thinking skills.

## References

Afriani, L. (2025). Understanding the Design of Research and Development Methods in the Field of Education. *Journal of Education and Learning Research, 6*(1), 4–8.

Amalia, S. N., & Fathurrahman, M. (2023). Pengembangan Media Flipbook pada Pembelajaran IPS Sekolah Dasar. *Joyful Learning Journal, 12*(1), 53–58.

Azmi, N., Putri, R. I. I., & Zulkardi. (2025). Wordwall-Based Learning Media to Increase Fourth-Grade Students' Motivation in Social Studies Learning. *Journal of Educational Sciences, 9*(5), 3245–3255. https://doi.org/10.31258/jes.9.5.p.3245-3255

Fardinelly, S., Slamet, A., & Susanti, R. (2024). Electronic Liveworksheet-Based Teaching Materials for Middle School Science Learning. *Journal of Educational Sciences, 8*(1), 118–127.

Fikriansyah, D. A., Maliki, M. A., Salendu, F. S., & Fadillah, R. (2023). Flipbook sebagai Inovasi Media Pembelajaran Digital: Mempersiapkan Pendidikan Menghadapi dan Memfasilitasi Pembelajaran Abad 21. *Jurnal Literasi Digital, 3*(3), 221–229. https://doi.org/10.54065/jld.3.3.2023.369

Gustiani, S. (2019). Research and development (R&D) method as a model design in educational research and its alternatives. *Holistics (Hospitality and Linguistics): Jurnal Ilmiah Bahasa Inggris*, *11*(2).

Harmoni, C., & Handayani, S. (2025). The Effect of Interactive Digital Worksheets through Nearpod on Elementary School Students' Critical Thinking Skills. *Journal of Educational Sciences, 9*(4), 2719–2729. https://doi.org/10.31258/jes.9.4.p.2719-2729

Imran, M. A., Akhir, M., & Arif, T. (2025). Development of a Prototype of Children's Literature E-Module Media Based on Google Workspace for Education to Improve Reading Literacy of Students in Elementary Schools. *Journal of Educational Sciences*, *9*(4), 2678-2686. https://doi.org/10.31258/jes.9.4.p.2678-2686

Jami, A., Suratmi, S., & Hartono, H. (2025). Developing Flash Flipbook as a Learning Resource to Improve Students' Digital Literacy in Elementary School. *Journal of Educational Technology Development, 1*(1), 1–12.

Juliani, R., & Ibrahim, N. (2023). Pengaruh Media Flipbook terhadap Hasil Belajar Bahasa Indonesia Siswa Kelas IV di Sekolah Dasar. *Elementary School Education Journal (ELSE), 7*(1).

Larissa, S. N., Purwanti, I. T., Eliwarti., & Harfal, Z. (2026). Development of Digital Eco-Learning Student Worksheet Flipbook to Improve Environmental Literacy and Teaching Effectiveness. *Journal of Educational Sciences, 10*(1), 1683–1692. https://doi.org/10.31258/jes.10.1.p.1683-1692

Musfita, M., Rasmitadila, R., & Puspitasari, K. A. (2025). Development of IPAS Learning Modules Based on Differentiated Instruction. *Journal of Educational Sciences*, *9*(5), 4232-4247. https://doi.org/10.31258/jes.9.5.p.4232-4247

Prasasti, R. D., & Anas, N. (2023). Pengembangan Media Digital Berbasis Flipbook untuk Meningkatkan Kemampuan Berpikir Kritis pada Peserta Didik. *Munaddhomah: Jurnal Manajemen Pendidikan Islam, 4*(3), 694–705. https://doi.org/10.31538/munaddhomah.v4i3.589

Purwaningsih, I., Oktariani, O., Hernawati, L., Wardarita, R., & Utami, P. I. (2022). Pendidikan Sebagai Suatu Sistem. *Jurnal Visionary: Penelitian dan Pengembangan Dibidang Administrasi Pendidikan, 10*(1), 21. https://doi.org/10.33394/vis.v10i1.5113

Rahayu, S., Fitriani, Y., & Kurniawan, D. (2025). AI-Based Learning Media through Teachy App to Support Adaptive Assessment and Student Engagement in Indonesian Elementary Schools. *Journal of Educational Sciences, 9*(5), 3788–3799. https://doi.org/10.31258/jes.9.5.p.3788-3799

Rahmawati, R., Asih, I., Yandari, V., & Pamungkas, A. S. (2023). Pengembangan Media Pembelajaran Digital Flipbook Tematik Kelas V Sekolah Dasar. *Jurnal Pendidikan Dasar, 9*(2), 337–350.

Riady, A. (2021). Pendidikan Berkualitas di Era Digital: Fokus Aplikasi Sebagai Media Pembelajaran. *Jurnal Literasi Digital, 1*(2), 70–80. https://doi.org/10.54065/jld.1.2.2021.15

Sakinah, F., Zainil, M., Ramadhan, S., & Muhammadi, M. (2025). Development of Interactive Learning Media Based on Google Sites Incorporating Problem-Based Learning for Grade V Elementary School Students. *Journal of Educational Sciences, 9*(6), 5073–5089. https://doi.org/10.31258/jes.9.6.p.5073-5089

Syahrir, F., Zulnuraini, Z., Kamisani, N., Azizah, A., & Pendit, S. S. D. (2025). Development of Learning Modules Based on Augmented Reality (AR) as a Means of Visualizing Abstract Concepts IPAS Theme Knowing Our Earth. *Journal of Educational Sciences*, *9*(4), 2647-2658. https://doi.org/10.31258/jes.9.4.p.2647-2658

How to cite this article:

Salsabila, A. N., & Bektiningsih, K. (2026). Development of Arfi Book Digital Flipbook Learning Media for IPAS Subjects on Traditions and Cultures of the Community Around Me to Improve Learning Outcomes of Fourth-Grade Elementary School Students. *Journal of Educational Sciences*, *10(4)*, 145-155.