



Development of Flipbook Media on Food Web Materials for Elementary School Science and Social Studies (IPAS)

Desy Sulistyaningtyas¹, M. Yusuf Setia Wardana¹, Fine Reffiane¹

Primary School Teacher Education, Faculty of Education, Universitas PGRI Semarang

Email Penulis Korespondensi : desysulistyaningtyas@gmail.com

Submitted: 02/02/2026

Accepted: 03/03/2026

Published: 05/04/2026

ABSTRACT

This research is driven by the low understanding of fifth-grade students at SDN Sengon 03 regarding food web topics, which are often perceived as abstract and complex due to the dominance of lecture-based methods and limited use of digital media. The study aims to describe the development process, validity, and practicality of digital flipbook media using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). This study employs the Research and Development (R&D) method. The results of the validity tests by subject matter and media experts showed scores exceeding 90% (highly valid). Practicality assessments yielded a score of 85% from teachers and an average student response of 96%, placing the media in the "highly practical" category. In conclusion, the flipbook media on food web topics is declared feasible, valid, and highly practical as an interactive visualization tool to support Science and Social Studies (IPAS) learning in elementary schools.

Keywords: ADDIE Model, Digital Flipbook, Elementary School, Food Webs, Research and Development

ABSTRAK

Penelitian ini dilatarbelakangi oleh rendahnya pemahaman siswa kelas V di SDN Sengon 03 terhadap materi jaring-jaring makanan, yang sering dianggap abstrak dan kompleks akibat dominasi metode ceramah serta terbatasnya penggunaan media digital. Penelitian ini bertujuan untuk mendeskripsikan proses pengembangan, validitas, dan kepraktisan media *flipbook* digital dengan menggunakan model ADDIE (Analysis, Design, Development, Implementation, dan Evaluation). Penelitian ini menggunakan metode Research and Development (R&D) atau penelitian dan pengembangan. Hasil uji validitas oleh ahli materi dan ahli media menunjukkan nilai di atas 90% (sangat valid). Penilaian kepraktisan memperoleh skor sebesar 85% dari guru dan rata-rata respons siswa sebesar 96%, sehingga media tersebut termasuk dalam kategori "sangat praktis". Kesimpulannya, media *flipbook* pada materi jaring-jaring makanan dinyatakan layak, valid, dan sangat praktis sebagai alat visualisasi interaktif untuk mendukung pembelajaran IPAS di sekolah dasar.

Kata Kunci: Buku digital interaktif, Jaring-jaring makanan, Model ADDIE, Penelitian dan pengembangan, Sekolah dasar

Introduction

The development of educational technology (edtech) no longer focuses merely on the use of devices, but has

become the foundation for building a learning ecosystem capable of adapting to 21st-century demands. The development of technology-based learning media is now a vital necessity



in the implementation of the *Kurikulum Merdeka* (Independent Curriculum), which emphasizes meaningful, interactive, and student-centered learning to improve the quality of both the learning process and outcomes (Haris & Simpliciano, 2025). Fundamentally, technology is a form of applying scientific knowledge to meet human needs, including in the field of education (Patonah et al., 2021).

Science and Social Studies (IPAS) learning in Elementary School is designed to equip students with the ability to understand various natural and social phenomena through scientific approaches, such as observing, questioning, exploring, and communicating findings (Irman et al., 2025). The *Kurikulum Merdeka* also asserts that IPAS learning must be linked to daily life and capable of encouraging active student participation in developing critical thinking skills and environmental awareness from an early age (Kemendikbudristek, 2022). Thus, the use of innovative and contextual learning media becomes a crucial aspect in supporting the success of the learning process.

Learning media plays an important role in enhancing the quality of the learning process, especially in helping students understand abstract concepts (Aryanti et al., 2025). One medium that can be utilized is the digital flipbook, a technology-based medium that integrates text, images, animation, video, and quizzes into a single interactive display (Arisandhi et al., 2023). With these characteristics, digital flipbooks are able to present material visually and progressively, making it easier to understand for elementary school students who tend to learn through concrete things.

Furthermore, the use of digital media has been proven to increase student motivation, engagement, and understanding compared to conventional learning (Anggraeni, 2022).

However, based on observations and interviews at SDN Sengon 03 on February 15, 2026, IPAS learning—specifically regarding ecosystems and food web materials—is still dominated by the lecture method and the use of textbooks. The utilization of interactive technology-based media remains limited, making the learning process less engaging. In fact, students show higher interest when learning uses visual media such as images and videos. The main problem faced is the difficulty students have in understanding the abstract concept of food webs, such as the relationships between producers, consumers, and predators, as well as the impact of changes within an ecosystem.

These conditions indicate a gap between the need for interactive learning and learning practices that are still conventional (Ayuningsih & Ansori, 2025). Therefore, learning media is needed that is not only visually appealing but also capable of presenting material systematically, contextually, and in an easy-to-understand manner. The development of digital flipbook media is an appropriate solution to address these issues.

Previous research by Prastowo et al. (2019) showed that Canva-based flipbook media has a very high level of validity (89%) and practicality (90.25%), and is effective in improving learning outcomes with an N-gain score in the high category. However, that study focused more on literacy aspects, leaving an opportunity to develop

similar media specifically focused on understanding IPAS concepts, particularly food web materials in elementary school.

Based on this, this research aims to develop flipbook media on food web materials for 5th-grade Elementary School IPAS subjects, as well as to test its level of validity and practicality. The developed media is expected to be an innovative solution in improving the quality of IPAS learning to be more interactive, contextual, and in accordance with the characteristics of elementary school students.

Research Methods

This study utilizes the Research and Development (R&D) method, which aims to produce a product in the form of flipbook learning media on food web materials. The R&D approach refers to the concept proposed by Borg and Gall (Sugiyono, 2013), which views developmental research as a process to design, develop, and validate products within the field of education.

The development model employed is the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation (Dousay & Branch, 2023). This model was selected due to its systematic and flexible procedures, allowing for continuous improvements so that the resulting product meets the criteria of being valid, feasible, and practical.

The **analysis** stage was conducted to identify learning needs through observation and interviews at SDN Sengon 03. The analysis results indicated that 5th-grade students experienced difficulties in understanding the abstract nature of food web materials and that the use of

interactive learning media remained limited (Choerunnisa et al., 2024).

The **design** stage included planning the learning media, structuring the material flow, creating storyboards, and designing an engaging and interactive flipbook interface tailored to the characteristics of elementary school students.

The **development** stage involved the actual creation of the flipbook media based on the previously established design. During this stage, content selection was performed, including text, images, videos, animations, and interactive quizzes. Subsequently, the media was validated by material experts and media experts to determine its feasibility level, followed by revisions based on the provided suggestions.

The **implementation** stage was carried out through a limited trial involving 9 5th-grade students at SDN Sengon 03, consisting of 6 male students and 3 female students. This trial aimed to determine the practicality level of the media through teacher and student response questionnaires.

The **evaluation** stage was conducted continuously throughout each development phase and after the product trial (Haris et al., 2025). Evaluation involved assessments from material experts, media experts, teachers, and students to measure the validity, feasibility, and practicality of the media. The evaluation results served as the basis for product revision and refinement, resulting in a flipbook medium ready for use in elementary school IPAS learning (Winahyu et al., 2024).

RESULTS AND DISCUSSION

This research developed flipbook media using the Research and Development (R&D) method through the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The ADDIE model was selected due to its systematic and flexible nature, which allows for continuous improvements throughout the development process (Dousay & Branch, 2023). The steps are as follows:

1. Analysis

The analysis stage was conducted to identify learning needs through observations and interviews with the teacher and 5th-grade students at SDN Sengon 03 regarding food web materials. The results of this analysis served as the foundation for designing media that corresponds to the actual conditions in the field.

Interviews with the teacher revealed that learning is already supported by media such as laptops, LCD projectors, and environmental practices. While these media are quite helpful in increasing student enthusiasm, the teacher still faces difficulties in explaining the material because the concept of food webs is abstract. Consequently, students struggle to understand the "eat and be eaten" relationships between living things.

Interviews with the students showed that some were not yet able to explain the roles of producers, consumers, and predators, nor the relationships within the ecosystem. Furthermore, students expressed a preference for learning media that are engaging, interactive, and include elements of stories, videos, and games to make the material easier to understand.

Based on observations, while the learning process had proceeded well and students appeared active, they still experienced difficulties in comprehending the interconnections between living organisms within a food web.

From these analysis results, it can be concluded that learning media capable of presenting material visually, interactively, and in an easy-to-understand manner is required. Flipbook media was chosen as the solution because it can integrate text, images, video, and interactive activities into one engaging medium. Thus, this analysis stage serves as the basis for designing media that meets the teacher's needs and the students' characteristics.

2. Design

The design stage is the product planning phase, structured based on the results of the needs analysis. In this stage, the researcher designed the flipbook learning media by considering the teacher's requirements, student characteristics, IPAS learning competencies, and the condition of the school's facilities and infrastructure. The design was carried out systematically to ensure that the developed media is not only visually appealing but also aligned with the learning objectives and competencies to be achieved in the food web material.



Gambar 1. Cover Media *Flipbook*
 Link *Flipbook* : <https://heyzine.com/flip-book/af323bbc43.html>

In the development process, the creation of the flipbook media was supported by various tools and materials, such as a laptop as the primary device, the Canva application for designing the interface and material layout, and an internet connection to search for image references and instructional videos. Additionally, relevant images and illustrations, instructional videos, and QR codes were utilized to facilitate media access. This media was then converted using flipbook software to create an interactive display. Grade V IPAS (Science and Social Studies) materials, student worksheets (LKPD), and evaluation questions were included as media content, supported by devices such as projectors and mobile phones for classroom trial use.

With structured planning and the utilization of these tools and materials, the flipbook media is expected to become an engaging and interactive learning medium that meets the needs of elementary school students.

3. Development

The development stage is the process of creating the flipbook media based on the prepared design. At this stage, the media was developed by

paying close attention to the consistency of the content, the quality of the visual display, and its relevance to the learning objectives. The designed media was created using the Canva application and subsequently converted into a digital flipbook format so it could be accessed via devices such as laptops or classroom projectors.

Once the development process was complete, validation testing was conducted to determine the feasibility level of the product. Validation was carried out by material experts and media experts with the aim of assessing the accuracy of the content, design quality, and the suitability of the media for the learning objectives. The assessment was conducted through questionnaires filled out by the experts. The results of the material and media validation are presented as follows:

Table 1. Results of Quantitative Evaluation by Media Experts

Media Expert Validator	Percentage	Category
Media Expert 1	96 %	Very Valid
Media Expert 2	96%	Very Valid

Media validation was conducted by media expert lecturer I, Mr. Henry Januar Saputra, S.Pd., M.Pd., on Thursday, February 5, 2026. Based on the assessment results from the validation questionnaire, a feasibility percentage of 96% was obtained, indicating that the developed flipbook media falls into the "highly valid" category.

Subsequently, validation was also carried out by media expert lecturer II, Mr. Choirul Huda, S.Si., S.Pd., M.Si., M.Pd., on Friday, February 6, 2026. The assessment results from the validation questionnaire showed a feasibility percentage of 96%; thus, the developed flipbook media was again

declared to be in the "highly valid" category.

Table 2. Results of Qualitative Evaluation by Material Experts

Material Expert Validator	Percentage	Category
Material Expert 1	94 %	Very Valid
Material Expert 2	96%	Very Valid

Media validation by material expert lecturer I, Mr. Henry Januar Saputra, S.Pd., M.Pd., was conducted on Thursday, February 5, 2026, resulting in a validation percentage of 94%. Media validation by material expert lecturer II, Mr. Choirul Huda, S.Si., S.Pd., M.Si., M.Pd., was conducted on Friday, February 6, 2026, resulting in a validation percentage of 96%. Based on the assessment results obtained from the material expert validation questionnaires, the media meets the "Highly Valid" criteria.

The revision stage for material validation and learning media validation was carried out by the author with the following results:

Table 3. Flipbook Media Revisions

Sebelum	Sesudah
 Sebelumnya dalam petunjuk penggunaan dalam navigasi halaman menggunakan warna putih	 Setelah diperbaiki supaya warna lebih jelas kemudian diganti dengan menggunakan warna hitam.

4. Implementation

The implementation stage is the phase where the flipbook learning media, which has undergone the expert validation process, is applied. Implementation is conducted to determine the level of practicality of the media during direct use in the learning process. The implementation activities were carried out at SDN Sengon 03 with a research subject of 9 fifth-grade students, consisting of 6 males and 3 females. These participants completed a questionnaire prepared by the researcher to evaluate the level of practicality of the developed learning media.



Figure 2. Research Implementation

5. Evaluation

The initial evaluation was conducted based on the validation results from media experts and material experts. These validation results indicated that the created flipbook falls into the "highly feasible" category for use. However, there were several recommendations for improvement from the validators, such as refining the layout, ensuring consistency in the colors used, and adding clearer instructions.

The suggestions provided by the experts were subsequently used as a basis for revising and perfecting the product before its application in classroom learning. Based on the media expert validation results, a percentage

of 96% was obtained from Mr. Henry Januar Saputra, S.Pd., M.Pd., and 96% from Mr. Choirul Huda, S.Si., S.Pd., M.Si., M.Pd., both indicating a "highly valid" category.

Meanwhile, the material expert validation results reached percentages of 94% and 96%, falling into the "highly valid" category. Regarding practicality, the teacher response questionnaire showed an average percentage of 85%, categorized as "highly practical," while the student response questionnaire obtained an average percentage of 96%, which also falls into the "highly practical" category.

One of the strengths of flipbook media in elementary school learning is its ability to attract active student engagement through appealing visual and interactive elements, making the learning process more varied. A limitation of this developed flipbook product is that the media development was focused only on a single topic, namely food webs in 5th-grade IPAS, so the research findings cannot yet be generalized to other IPAS materials or different grade levels.

CONCLUSION

Based on the results of the research and development of Flipbook media for the 5th-grade Elementary School IPAS subject on Food Web material, it is concluded that the flipbook media has been successfully developed by applying the ADDIE model, which includes five systematic stages: Analysis, Design, Development, Implementation, and Evaluation.

The validity level of the flipbook media is declared "highly valid" for use in IPAS learning. This is based on the assessments of material and media experts, who provided validity percentages above 90%. Regarding the level of practicality, this media has a very high practicality rating, with a percentage of 85% from teacher feedback and an average of 96% from the responses of 5th-grade students at SDN Sengon 03. Overall, this interactive digital flipbook media is declared feasible, valid,

and highly practical as a solution to overcome visualization barriers of abstract food web material, while simultaneously supporting the digitalization of learning in Elementary Schools. The author notes a limitation: the trial was conducted within a very limited scope, involving only 9 students at one school (SDN Sengon 03); thus, its effectiveness on a broader scale is not yet fully known.

ACKNOWLEDGEMENTS

The author expresses sincere gratitude to the extended family of SDN Sengon 03, particularly to the principal, the 5th-grade teacher, and the students who provided permission and exceptional cooperation during the data collection and media trial process. The support from these various parties has enabled this flipbook media development research to be completed successfully.

REFERENCES

- Anggraeni, N. (2022). Pengembangan Media Flipbook Interaktif Pada Pembelajaran Keterampilan Menyimak Materi Sekapati Kelas IV Sekolah Dasar. *Jurnal Pancar (Pendidik Anak Cerdas Dan Pintar)*, 6(1), 200–205. <https://jurnal.unugha.ac.id/index.php/pancar/article/view/121>
- Arisandhi, G. A. M. M., Wibawa, I. M. C., & Yudiana, K. (2023). Flipbook : Media Pembelajaran Interaktif Untuk Meningkatkan Kognitif IPA Siswa Sekolah Dasar. *MIMBAR PGSD Undiksha*, 11(1), 165–174. <https://doi.org/10.23887/jjpgsd.v11i1.55034>
- Aryanti, I. L., Damayani, A., & Reffiane, F. (2025). Pengembangan Media Panni Pada Pelajaran Matematika Materi Pecahan Senilai Kelas IV Sekolah Dasar. *Jurnal Wawasan Pendidikan*, 5(2), 742–752. <https://journal.upgris.ac.id/index.php/wp/article/view/23030>

- Ayuningsih, M. T., & Ansori, I. (2025). Pengembangan Media Flipbook Dengan Model PBL Untuk Meningkatkan Hasil Belajar IPAS Pada Siswa Kelas IV SD Negeri Kalisegoro Kota Semarang. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, 10(01), 331–342.
<https://journal.unpas.ac.id/index.php/pendas/article/view/23334>
- Choerunnisa, D. M., Jannah, A. A. M., & Salsabilla, A. (2024). The Use of Various Media in Teaching English to Elementary School Student. *UICELE Proceeding*, 01(09).
<https://uicele.unpak.ac.id/index.php/UICELE/article/view/14>
- Dousay, T. A., & Branch, R. M. (2023). *Survey of Instructional Design Models: Sixth Edition*. BRILL.
- Haris, M. N., Lestari, R., Murty, D. A., Maghfiroh, M., Sasongko, A. D. W., Widadi, Z., Ramadhani, F. M. Al, Nuris, M. A., Agama, D. P. S., Suryani, R., Adhifa, S. N., & Basyaib, F. F. (2025). Pelatihan Teknik Cabut Warna pada Totebag sebagai Pengembangan Kompetensi Siswa di SMK Negeri 3 Pekalongan. *Archive: Jurnal Pengabdian Kepada Masyarakat*, 4(2), 285–295.
<https://doi.org/10.55506/arch.v4i2.165>
- Haris, M. N., & Simpliciano, R. K. (2025). Pengenalan Kegiatan Membatik Terhadap Pembentukan Karakter Peserta Didik di SD Negeri 08 Bendan Kota Pekalongan. *Perwira Journal of Community Development*, 5(2), 43–46.
<https://doi.org/10.54199/pjcd.v5i2.473>
- Irman, I., Surahman, E., Agustian, D., Herawati, D., & Badriah, L. (2025). Profil Kemampuan Berpikir Kreatif Peserta Didik dalam Pembelajaran IPA. *Jurnal Pendidikan MIPA*, 15(1), 60–67.
<https://doi.org/10.37630/jpm.v15i1.2318>
- Kemendikbudristek. (2022). *Capaian pembelajaran mata pelajaran IPAS sekolah dasar*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Patonah, S., Sajidan, S., Cari, C., & Rahardjo, S. B. (2021). The Effectiveness of STLC (Science Technology Learning Cycle) To Empowering Critical Thinking Skills. *International Journal of Instruction*, 14(3), 39–58.
<https://doi.org/10.29333/iji.2021.1433a>
- Prastowo, B. F., Basori, M., & Kurnia, I. (2019). Pengembangan Media Pembelajaran Flipbook Berbasis Canva untuk Meningkatkan Kemampuan Literasi pada Materi Harmoni Dalam Ekosistem Kelas 5 SDN Ngronggot 1. *Prosiding SEMDIKJAR (Seminar Nasional Pendidikan Dan Pembelajaran)*, 2248–2259.
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. ALFABETA.
- Winahyu, R. S., Wardana, M. Y. S., & Ardiyanto, A. (2024). Pengembangan Media Pembelajaran Berbasis Website pada Mata Pelajaran IPAS Materi Wujud Zat dan Perubahannya Kelas IV SDN Sidomukti 03. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, 09(04), 1345–1357.
<https://journal.unpas.ac.id/index.php/pendas/article/view/19941>