



Design and Implementation of a Canva-Based Animation Video to Enhance Understanding of Food Webs in Elementary Science

Yuliana¹, Hartono^{1*}, Masagus Mhd.Tibrani¹

¹Educational Technology, Faculty of Teacher Training and Education, Universitas Sriwijaya, Palembang, Indonesia.

Received: January 18, 2026

Revised: February 28, 2026

Accepted: April 05, 2026

Published: April 05, 2026

Corresponding Author:

Hartono

hartono@fkip.unsri.ac.id

DOI: [10.29303/jppipa.v12i3.14313](https://doi.org/10.29303/jppipa.v12i3.14313)

 Open Access

© 2026 The Authors. This article is distributed under a (CC-BY License)



Abstract: This study aims to develop and implement instructional media in the form of Canva-based animated videos to improve students' conceptual understanding of Food Webs in the Natural and Social Sciences (IPAS) subject for Grade V elementary school students. The development model employed is the Alessi & Trollip model, which consists of three main stages: planning, design, and development. The research subjects were Grade V students who participated in the learning process using the developed media. Research instruments included expert validation sheets, practicality questionnaires, and learning achievement tests in the form of pretests and posttests. The validation results indicate that the media achieved a very valid category, with an average score of 87.07%, covering language, content, and media aspects. Practicality testing conducted through individual trials and small group trials also showed very high results, with percentages of 97.33% and 74.40%, respectively. Effectiveness testing at the field trial stage revealed a significant improvement in students' learning outcomes, with an average N-Gain score of 0.63, which falls into the moderate category. These findings demonstrate that Canva-based animated videos are effective in enhancing students' conceptual understanding through the presentation of material that is visual, interactive, and contextual. Therefore, this instructional media is feasible to be implemented as an innovative alternative in IPAS learning at the elementary school level to strengthen concept mastery and increase students' learning motivation.

Keywords: Animated video; Canva; Elementary school; Food webs; IPAS, Learning outcomes

Introduction

The development of science and technology in the 21st century has brought significant changes to the field of education. Learning processes are no longer limited to conventional, teacher-centered methods, but have transformed toward more interactive and technology-based learning approaches (Haleem et al., 2022). The integration of digital technology in learning enables the presentation of instructional content in more engaging and easily understood forms through visual media such as animated videos (Schoenherr et al., 2024). In the context of science learning at the elementary school level, the use of digital media is no longer merely a complement but has become a necessity to bridge abstract concepts into more concrete and meaningful

learning experiences (Muawanah et al., 2024). One of the main challenges in elementary science education is how teachers can help students understand complex ecological concepts, such as food webs (Mambrey et al., 2022). This concept requires systematic thinking skills and an understanding of reciprocal relationships among organisms within an ecosystem, which often demands system-thinking-based learning approaches and visual models (Sanders et al., 2023). However, most students experience difficulty visualizing energy chains and interactions among living organisms when instruction relies solely on verbal explanations or static images in textbooks (Wennersten et al., 2023). Such abstract learning conditions often lead students to lose interest and fail to develop a comprehensive understanding, thereby necessitating instructional media that can

How to Cite:

Yuliana, Hartono, & Tibrani, M. M. (2026). Design and Implementation of a Canva-Based Animation Video to Enhance Understanding of Food Webs in Elementary Science. *Jurnal Penelitian Pendidikan IPA*, 12(3), 342-352. <https://doi.org/10.29303/jppipa.v12i3.14313>

enhance engagement and retention (Kwangmuang et al., 2024). Therefore, learning media that integrate visual, audio, and narrative elements are needed to stimulate students' imagination and active involvement in learning (Kleftodimos, 2024; Mekonnen et al., 2024).

In this context, animated videos represent one of the most effective forms of instructional media for strengthening students' understanding of science concepts (Istiqomah & Adi, 2024). Animated videos allow teachers to present processes that are difficult to observe directly in dynamic and more comprehensible visual formats (Novianti et al., 2023). Through animation, food web concepts can be illustrated in a more concrete, engaging, and contextual manner aligned with students' real-world experiences (Mukaromah et al., 2024). Pedagogically, animated videos also support the principles of multimodal learning by utilizing both visual and auditory channels to enhance concentration and conceptual understanding (Rabiasa et al., 2024). Moreover, animation-based interactive media facilitate active learning, as students can observe and reason about the relationships among ecosystem components presented in the media. To produce effective and user-friendly instructional media, the design and development process constitutes a crucial stage in creating high-quality learning videos. Instructional design not only focuses on visual appearance but also encompasses pedagogical aspects, content structure, narration, and interactivity that align with the characteristics of elementary school learners (Dursun & Aykan, 2025). Well-designed media are able to facilitate learning objectives and provide meaningful learning experiences. The implementation stage then serves as a subsequent step to assess the extent to which the developed media can be applied in real classroom settings, viewed in terms of practicality, effectiveness, and user responses from both students and teachers (Silfiani et al., 2022). Thus, a design-and-implementation-based approach enables a comprehensive evaluation of media quality as well as its impact on learning outcomes.

In this regard, Canva emerges as a digital platform with significant potential for the development of educational animated videos, as it can be used by teachers and students through a simple and intuitive interface (Hidayah et al., 2023). Canva offers a wide range of graphic design and animation features, visual and audio libraries, and diverse templates, enabling educators to design engaging learning videos without requiring advanced technical skills (Beaumont, 2025). Beyond technical convenience, Canva supports online collaboration and the creation of contextual content that aligns with the characteristics of the digital generation (Nisyaa et al., 2025). Therefore, the use of Canva in developing animated learning videos not only enriches

the variety of instructional media but also supports digital literacy within elementary school environments. Meanwhile, IPAS (Natural and Social Sciences) learning in elementary schools plays an important role in fostering students' scientific, logical, and critical thinking skills (Salfina et al., 2021). IPAS emphasizes understanding the interconnections between humans and the environment, including ecological relationships such as food chains and food webs, as reflected in the development of animation-based and e-comic media related to environmental issues such as plastic waste (Kulsum & Isdaryanti, 2024). Accordingly, IPAS learning requires approaches that are not only informative but also applicative and contextual, such as the use of IPAS learning media based on Adobe Animate, which has been tested in Grade V classes and shown to improve learning outcomes (Rosemarry & Isdaryanti, 2024). The use of Canva-based animated media or e-comics in IPAS learning is expected to enhance students' ability to comprehensively understand ecological concepts while fostering curiosity and ecological awareness from an early age.

As a foundation for development, a needs analysis was conducted at SDN 4 Ngulak involving 30 Grade V students and three teachers. The results indicated that most students understood the material better when it was presented through images and sound (86.67%), preferred media with attractive and aesthetic designs (83.33%), and experienced difficulties in understanding abstract concepts when instruction relied solely on verbal explanations. From the teachers' perspective, all respondents stated that learning videos could enhance students' focus, motivation, and participation in the classroom, although adjustments to content context and video duration were still needed to improve effectiveness. These findings reinforce the urgency of developing Canva-based animated videos that are not only visually appealing but also capable of improving students' conceptual understanding of food webs. Based on this background, the present study focuses on the design and implementation of Canva-based animated videos to enhance students' understanding of food web concepts in Grade V IPAS learning at the elementary school level. This development is expected to serve as an innovative solution to the limitations of conventional media, while also contributing to the improvement of science learning quality in elementary schools through more interactive, contextual, and meaningful learning approaches.

Method

Type of Research

This study is categorized as development research, which aims to design and develop instructional media

in the form of Canva-based animated videos. Development research focuses on a systematic process to produce learning products that are valid, practical, and effective. The development model applied in this study is the Alessi & Trollip model, which consists of three main stages: planning, design, and development (Alfi et al., 2021; Muslim et al., 2022). This model was selected because it provides comprehensive guidance for designing technology-based instructional media that align with the characteristics of elementary school learners. Accordingly, the use of the Alessi & Trollip model is expected to result in animated instructional videos that are engaging, efficient, and capable of enhancing students' involvement and understanding (Nefillia, 2021).

Research Subjects, Objects, Place, and Time

The subjects of this study were 43 fifth-grade students of SD Negeri Jirak Jaya, consisting of 23 male students and 20 female students. The object of the study focused on the development of Canva-based animated video media on the concept of food webs for Grade V elementary school students. The research was conducted at SD Negeri Jirak Jaya, Jirak Subdistrict, Musi Banyuasin Regency, during the odd semester of the 2025/2026 academic year.

Research Procedures

The stages of the Alessi and Trollip model consist of three phases: Planning, Design, and Development. In the planning phase, the first step involves identifying learning needs, the second step determining learning objectives, and the third step analyzing available resources. In the design phase, the first step is creating flowcharts and storyboards, the second step designing the animated video media, and the third step determining technical specifications. The final phase, development, includes: producing animated videos based on the storyboard, expert validation, alpha testing, and revision and finalization. After revisions are made based on all feedback received, the final product is produced in the form of instructional materials.

Data Collection Techniques

Data collection techniques in this development research were aligned with the stages of the Alessi & Trollip model, namely planning, design, and development. During the planning stage, data were collected through initial observations and unstructured interviews with Grade V teachers to identify learning needs, students' difficulties, and previously used instructional media. Observations were conducted to obtain an authentic picture of IPAS learning conditions in the classroom, while interviews were used to explore teachers' perceptions and expectations regarding the

media to be developed. Furthermore, during the design and development stages, expert validation questionnaires were employed to collect data on media feasibility in terms of content, design, and usability. Content experts assessed the alignment of video materials with basic competencies and the characteristics of elementary school students, while media experts evaluated visual appearance, animation quality, and ease of use (Abdulrahman et al., 2020). After validation, limited trials were conducted with Grade V students to obtain data on practicality and students' responses to the use of Canva-based animated videos in IPAS learning. The instruments used in this study included observation sheets, interview guidelines, expert validation questionnaires, and student response questionnaires. All instruments were developed based on indicators relevant to the research objectives and constructed with reference to theories of instructional media evaluation. The collected data were then analyzed using descriptive quantitative and qualitative methods to describe the quality, practicality, and effectiveness of the developed media.

Data Analysis Techniques

Data analysis in this study was conducted using descriptive quantitative and qualitative approaches, in accordance with the stages of the Alessi & Trollip development model. The analysis focused on evaluating the validity, practicality, and user responses to the developed instructional media.

Expert Validation

The developed media were validated by several experts, namely content experts, media experts, and language experts. Each expert conducted assessments using a Likert scale.

Table 1. Likert scale assessment

Score	Category
5	Very Good
4	Good
3	Fair
2	Poor
1	Very Poor

After calculating each statement item in the instrument, the data were processed using the following formula:

$$X = \frac{\text{Obtained Score}}{\text{Ideal Score}} \times 100\% \tag{1}$$

The interpretation of the results obtained from the formulation is adjusted according to Table 2.

Table 2. Interpretation of validation results

Range (%)	Category
21-40	Less Valid
41-60	Fairly Valid
61-80	Valid
81-100	Very Valid

Practicality Analysis

The subjects of the practicality questionnaire in this study were Grade V elementary school students who acted as direct users of the developed animated video. This questionnaire aimed to measure the practicality of the product based on students' experiences in using the animated video as a learning medium. Students responded to the instrument using a Likert scale, and the data were analyzed using the following formula.

$$X = \frac{\text{Obtained Score}}{\text{Ideal Score}} \times 100\% \quad (2)$$

The results obtained from the mean score were then categorized according to the criteria established in Table 3.

Table 3. Criteria for practicality score assessment

Range (%)	Category
0-20	Very Impractical
21-40	Impractical
41-60	Fair
61-80	Practical
81-100	Very Practical

Analysis of Test Result Data

Test result data were analyzed by comparing students' learning outcomes from the pretest and the level of mastery achieved in the posttest, with reference to the Minimum Mastery Criteria (KKM). The KKM for the development of Canva-based animated videos on the food web concept in Grade V elementary school science learning was set at 6. To examine the improvement and compare mean scores, the N-Gain Score was employed. To obtain the N-Gain Score, the following formula was used:

$$N_{\text{gain}} = \frac{S_{\text{posttest}} - S_{\text{pretest}}}{S_{\text{maximum}} - S_{\text{pretest}}} \quad (3)$$

Description:

N-Gain = normalized gain score

Pretest score = average pretest score

Posttest score = average posttest score

Maximum score = maximum possible score

The level of the N-Gain score can be classified as follows: If $g \geq 0.70$, the resulting N-Gain is categorized as high; If $0.70 > g \geq 0.30$, the resulting N-Gain is categorized as moderate; If $g < 0.30$, the resulting N-Gain is categorized as low.

Result and Discussion

Results of Product Development

The product developed in this study is a Canva-based animated instructional video for Grade V elementary school IPAS (Natural and Social Sciences) with the topic "Food Webs in Ecosystems." The development process followed the three main stages of the Alessi & Trollip model, namely planning, design, and development. During the planning stage, a needs analysis was conducted through classroom observations and interviews with teachers to identify students' difficulties in understanding ecological concepts. The analysis revealed that most students experienced challenges in visualizing energy flow among organisms and understanding the interrelationships between living beings within an ecosystem.

The design stage focused on developing the storyboard, narrative script, selection of characters, backgrounds, and supporting graphic elements. The design was tailored to the characteristics of elementary school students, employing a simple, colorful, and communicative visual style. The principles of multimodal learning were applied by integrating visual elements, text, and audio to enhance students' conceptual understanding. The development stage was carried out using the Canva platform, which was selected due to its ease of access, availability of animated templates, and collaborative features. The development process included creating ecosystem illustrations, animating energy flow among living organisms, and adding explanatory audio narration. The final product is an animated video with a duration of approximately 7-10 minutes, presented in HD resolution and MP4 format, which can be used both offline and through online learning platforms. The following section presents several images illustrating the prototype of the developed product prior to expert validation.



Figure 1. Background interface



Figure 2. Menu interface



Figure 3. Material interface



Figure 4. Quiz

The media produced in this study were subsequently validated by content experts and media experts, and then subjected to limited trials with Grade V elementary school students. The validation results indicated that the animated video was considered feasible and engaging, while the limited trials demonstrated positive responses and an improvement in students' understanding of ecological concepts.

Expert Validation

Expert validation was conducted to ensure the quality and feasibility of the Canva-based animated video prior to its implementation in the learning process. Three main aspects were validated: language, content, and media, involving experts in education, linguistics, and educational technology. Each expert provided assessments and suggestions for improvement to ensure clarity of language, accuracy of content, and media quality that is engaging and easily understood by elementary school students. The results of the expert validation are presented in Table 4.

Table 4. Summary of expert validation results

Expert Validation	Score (%)	Category
Media	86	Very Valid
Content	80	Very Valid
Language	95.20	Very Valid
Average Score	87.07	Very Valid

Based on the experts' validation results, all assessed aspects demonstrated a very high level of feasibility. Validation was conducted on three main aspects: media, content, and language. In the media aspect, a score of 86% was obtained, indicating that the visual appearance, design, animation, and overall technical quality of the video met very high feasibility standards. This suggests that the media were effectively designed, engaging, and appropriate for the characteristics of the learners. The content aspect received a score of 80%, which also falls into the very valid category. This score indicates that the video content aligns with learning objectives, is relevant to the curriculum, and presents the food web concept scientifically and contextually. Meanwhile, the language aspect achieved the highest score of 95.20%, reflecting that the language used in the video is highly appropriate, communicative, suitable for students' comprehension levels, and free from linguistic errors. Overall, the average validation score was 87.07%, categorized as Very Valid. This indicates that the Canva-based animated video is suitable for use in IPAS learning for Grade V elementary school without requiring major revisions. This validation serves as an important foundation for proceedings to the limited trial or implementation stage.

Practicality Testing

After the expert validation process and the product was declared feasible with minor revisions, the next stage was practicality testing. This testing aimed to determine the extent to which the Canva-based animated video was easy to use, understandable, and engaging for students. The testing was conducted in two stages: individual trials and small group trials.

Individual Trial

In the individual trial stage, several students were randomly selected to use the product independently to identify initial usage constraints and obtain direct feedback regarding the appearance and content of the video. After revisions based on the individual trial results, the outcomes are presented in Table 5.

Table 5. Results of individual trial

Student	Maximum Score	Practicality Score	Percentage (%)
DKP	75	74	98.67
AA	75	72	96.00
APR	75	73	97.33
Total	225	219	97.33

The results of the individual trial showed a very high level of practicality, with an average percentage of 97.33%. The three participating students (DKP, AA, and APR) assessed the media as easy to use, engaging, and capable of delivering the material clearly and sequentially. Students were able to understand the content well, indicating that the media effectively supported the IPAS learning process. Thus, the

Table 6. Results of small group trial

Student	Clarity of Material	Student Interest	Media Suitability	Attractiveness	Ease of Access	Total Score
EFS	25	15	10	10	15	75
AR	25	15	10	10	15	75
AW	25	15	10	10	15	75
IW	25	15	10	10	15	75
D	25	15	10	10	10	70
G	25	15	10	10	15	75
KKS	25	14	10	10	15	74
NSS	25	15	10	10	15	75
IA	25	15	10	10	15	75
JAA	25	15	10	10	15	75
Average Score						74.40

The results of the small group trial involving ten students indicated that the Canva-based animated video possessed a very high level of practicality. Assessment was conducted across five main aspects: clarity of material, student interest, media suitability, attractiveness, and ease of access, with a maximum total score of 75 points. The average score obtained was 74.4, which is close to the maximum score. Nearly all participants awarded maximum scores for clarity of material, media suitability, and attractiveness, demonstrating that the content was clearly presented, engaging, and aligned with learning objectives. A few participants provided slightly lower scores for student interest and ease of access due to minor technical issues; however, these did not affect the overall evaluation of media quality. Overall, students responded positively to the use of the animated video, describing it as engaging, easy to use, and helpful in understanding the food web

developed product met the practicality criteria and was suitable for further implementation. Based on student feedback, the media functioned well and did not require significant revisions, although minor technical issues were noted, such as video freezing or interruption on certain devices and network disturbances during playback. These findings suggest that device specifications and network stability are external factors that should be considered when implementing digital-based media. Overall, the individual trial confirmed that the Canva-based animated video is highly practical, effective, and has strong potential to enhance students' understanding of food web concepts in an interactive and enjoyable manner.

Small Group Trial

Practicality testing was continued through a small group trial involving a larger number of students. This stage aimed to assess the practicality of the product in a more authentic classroom context and ensure that the animated video could be used effectively in learning activities. The results are presented in Table 6.

concept more interactively. The appealing visuals, structured presentation of content, and ease of access made the media highly favorable among students. Based on both quantitative results and qualitative feedback, it can be concluded that the Canva-based animated video demonstrates a very high level of practicality and is suitable for broader implementation in elementary school IPAS learning. Considering the results of the individual and small group trials, it can be concluded that the developed product has been proven practical, with minor revision notes. After revisions were completed, the process continued to the fieldtesting stage.

Field Testing

The field testing stage was conducted to determine the effectiveness of the Canva-based animated video in improving students' understanding of the food web

concept in Grade V IPAS learning. This stage involved all students in one class as research subjects. The primary objective was to assess the extent to which the media – previously declared valid and practical – could produce a measurable impact on students’ learning outcomes. Effectiveness data were obtained through conceptual understanding tests administered before (pretest) and after (posttest) the use of the media.

Table 7. Summary of pretest results

Score Range	Number of Students	Percentage (%)	Category
81-100	6	20	Very Good
61-80	15	50	Good
41-60	8	26.67	Fair
21-40	1	3.33	Poor
0-20	0	0	Very Poor
Total	30		

The pretest results showed that most students already possessed a good initial understanding of the food web material. A total of 15 students (50%) were categorized as Good, and 6 students (20%) as Very Good, indicating readiness to engage with innovative learning media. Meanwhile, 8 students (26.67%) were categorized as Fair, and 1 student (3.33%) as Poor, with none classified as Very Poor. These findings indicate that although students’ initial understanding was generally adequate, reinforcement was still required to ensure uniform mastery through the use of engaging and interactive animated video media.

Table 8. Summary of posttest results

Score Range	Number of Students	Percentage %	Category
81-100	24	80	Very Good
61-80	6	20	Good
41-60	0	0	Fair
21-40	0	0	Poor
0-20	0	0	Very Poor
Total	30		

After learning with the Canva-based animated video, posttest results demonstrated a significant improvement in students’ understanding of the food web concept of the 30 students, 24 (80%) achieved the Very Good category, while the remaining 6 students (20%) were in the good category, with none falling into the Fair or Poor categories. Compared to the pretest results, where only 6 students (20%) achieved the Very Good category, this represents a substantial improvement in learning achievement. These findings confirm that the use of Canva-based animated videos is effective in enhancing conceptual understanding by providing learning experiences that are more visual, interactive, and enjoyable, thereby optimally supporting improved student learning outcomes.

Analysis of N-gain Score

Table 9. Comparison of Pretest and Posttest

Name	Pretest	Posttest	N _{gain}	Category
MR	67	100	0.50	Mid
FS	73	93	0.74	Mid
KNA	87	100	1.00	High
MRS	40	87	0.78	Mid
SA	100	100	0.00	Low
APS	87	100	1.00	High
SYS	93	100	1.00	High
CR	93	100	1.00	High
MF	60	93	0.83	High
MAZ	80	100	1.00	High
EA	73	100	1.00	High
RRS	67	100	1.00	High
DM	53	87	0.72	Mid
BSD	87	100	1.00	High
ADZ	60	93	0.83	High
MZ	67	93	0.79	Mid
NT	40	73	0.55	Mid
DF	47	73	0.49	Mid
HB	93	100	1.00	High
MA	47	87	0.75	Mid
TS	67	93	0.79	Mid
EWC	73	100	1.00	High
ASPJ	100	100	0.00	Low
CR	60	87	0.68	High
MAI	93	100	1.00	High
AN	67	73	0.18	Low
MEB	87	87	0.00	Low
NGB	53	87	0.72	High
NA	73	100	1.00	High
ONA	93	100	1.00	High
Total	1640	2470		
Avarage	54.67	82.33		
Minimum	40	70	0.63	Mid
Maximum	100	100		

The pretest results indicate that students’ initial understanding of the Food Web concept was still varied, with the lowest score at 40, the highest score at 100, and an average score of 54.67. This variation suggests that while some students had already understood the material well, others still required conceptual reinforcement. After participating in learning activities using the Canva-based animated video, the posttest results demonstrated a significant improvement, with the lowest score increasing to 70 and the average score reaching 82.33. This improvement indicates that all students experienced better conceptual understanding and confirms that the instructional media effectively supported learning in a more engaging and meaningful way. Based on the N-Gain calculation of 0.63, the improvement falls into the moderate category according to Hake’s classification. This finding indicates that the Canva-based animated video has good effectiveness in

improving learning outcomes, particularly in helping students transform abstract concepts into more concrete understanding through visualization and interactivity. Therefore, the media not only strengthened the understanding of students who already had good prior knowledge, but also helped bridge learning gaps among students, making it suitable for use as an innovative and meaningful alternative instructional medium in elementary school IPAS learning.

Discussion

The results of this study indicate that the use of Canva-based animated video learning media is effective in improving students' understanding of the Food Web concept in Grade V elementary school IPAS instruction. Analysis of the pretest and posttest data shows a substantial increase in the mean score from 54.67 to 82.33, with an N-Gain value of 0.63, which falls into the moderate category according to classification (Mirzaei & Moore, 2014). This finding suggests that the implemented instructional intervention had a meaningful positive impact on students' learning outcomes. These results are consistent with the findings of Caella & Yulianto (2024) and Angelika et al. (2025), who reported that the use of animated videos significantly enhances both learning outcomes and students' interest in science learning at the elementary school level. Furthermore, a systematic review conducted by Putri et al. (2024) confirmed that animated video media are effective in improving science learning outcomes because they present abstract concepts in a more concrete and comprehensible manner for students. Thus, the improvement in learning outcomes observed in this study reinforces existing empirical evidence regarding the effectiveness of animated video media in elementary IPAS learning. The observed improvement in students' conceptual understanding can be explained through multimodal learning theory, as proposed by Mayer & Moreno (2010), which posits that learning is more effective when information is presented through a combination of text, audio, and visual elements. The Canva-based animated video integrates these three components in a coherent manner, enabling students to process information through multiple cognitive channels. This is in line with the findings of Mnguni & Moyo (2021) who demonstrated that interactive animation enhances conceptual understanding and critical thinking skills by visualizing scientific processes in an engaging and contextualized way. Therefore, the use of animation in this study supports the principles of multimedia learning, wherein the integration of visual and verbal representations facilitates meaningful learning.

From a constructivist perspective, the effectiveness of the animated video media can also be explained by

the theory that learners actively construct knowledge through experience and interaction with their learning environment (Saad et al., 2025). In this context, animated videos provide a contextual learning experience by dynamically and realistically illustrating relationships among organisms within a food web. Students do not merely receive information passively; instead, they actively construct understanding based on the visual representations they observe. This finding is supported by Staneviciene & Žekienė (2025) who found that the use of animation as a pedagogical tool significantly improves students' conceptual understanding and learning engagement. Similarly, Teplá et al. (2022), reported that the use of animations and three-dimensional models in science education enhances intrinsic motivation and learning outcomes. Regarding feasibility, the expert validation results, which yielded an average score of 87.07% categorized as very valid, indicate that the developed media meet feasibility standards in terms of content, language, and media design. The high validity score for the language aspect (95.2%) demonstrates that the use of simple, clear, and communicative language is well aligned with the developmental characteristics of elementary school students (Muzaki et al., 2023). These findings are consistent with previous development studies reporting high feasibility levels for Canva-based learning media across content, media, and language aspects (Rifai, 2026). Additionally, adherence to multimedia design principles further strengthens the quality and relevance of the developed media (Liu & Jin, 2025).

The practicality testing conducted through individual and small-group trials revealed very high practicality levels, with percentages of 97.33% and a mean score of 74.4 out of 75, respectively. These results indicate that the Canva-based animated video media are easy to use, engaging, and well suited to students' learning needs. This finding aligns with Diah et al. (2024) who reported a 100% practicality score for animated video media in thematic learning at the elementary level. Similar results were also reported by Chrisyarani et al. (2022), who found that animated comic video media effectively increased student engagement and learning motivation due to their appealing visual presentation and accessibility. Moreover, Azizah & Ratnaningrum (2025), in *Jurnal Basicedu*, reported that Canva-based interactive media achieved a practicality level of 96.07% and were able to promote students' independent learning through user-friendly navigation and attractive visual design. Overall, the findings of this study reinforce the view that digital-based learning media, particularly Canva-based animated videos, constitute an effective means of enhancing the quality of IPAS instruction in elementary schools. These media not only facilitate clearer visualization of abstract concepts such

as organismal relationships within ecosystems, but also increase students' motivation, engagement, and conceptual understanding. Consequently, this study contributes to the expanding body of literature on the use of accessible digital tools such as Canva as innovative, adaptive, and efficient interactive learning media that are well aligned with the demands of 21st-century education.

Conclusion

Based on the results of the study entitled "Design and Implementation of a Canva-Based Animation Video to Enhance Understanding of Food Webs in Elementary Science," it can be concluded that the developed Canva-based animated video learning media are valid, practical, and effective in improving students' understanding of food web concepts. Expert validation results indicated a very high level of feasibility, with an average score of 87.07%, encompassing the aspects of language, content, and media design. Practicality testing conducted through individual and small-group trials also yielded high scores of 97.33% and 74.40, respectively, indicating that the media are easy to use, engaging, and well aligned with the characteristics of elementary school students. Furthermore, the field testing results demonstrated a significant improvement in students' conceptual understanding after using the Canva-based animated video media, as reflected by an average N-Gain score of 0.63, which falls into the moderate category. This improvement confirms that the visualization of ecological concepts through animated media effectively helps students understand inter-organism relationships within ecosystems in a more concrete and contextual manner. Therefore, this Canva-based learning media are suitable for use as an innovative alternative in IPAS instruction, as they not only facilitate the comprehension of abstract concepts but also enhance students' learning motivation and active engagement in the learning process.

Acknowledgments

Thanks to all parties who have supported the implementation of this research. I hope this research can be useful.

Author Contributions

Conceptualization, methodology, validation, Y., H., and M.M.T.; formal analysis, investigation, resources, data curation, writing – original draft preparation, writing – review and editing, visualization, Y.; supervision, H. and M.M.T.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

References

- Abdulrahman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olowoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia Tools in the Teaching and Learning Processes: A Systematic Review. *Heliyon*, 6(11), e05312. <https://doi.org/10.1016/j.heliyon.2020.e05312>
- Alfi, A. S., Susanti, L. R. R., & Siahaan, S. M. (2021). Development of Multimedia Interactive Learning of Hydrosphere Material for High School. *JTP - Jurnal Teknologi Pendidikan*, 23(1), 1–10. <https://doi.org/10.21009/jtp.v23i1.18579>
- Angelika, M., Junaidi, J., & Mahendra, Y. (2025). Using Animated Videos in Science Learning on Learning Outcomes of Primary School Students: A Systematic Literature Review. *International Journal of Elementary Education*, 9(3), 381–390. <https://doi.org/10.23887/ijee.v9i3.92957>
- Azizah, N. N., & Ratnaningrum, I. (2025). Canva Based Interactive Learning Media to Improve the Ability to Find the Main Idea of Grade IV Elementary School Students. *International Journal of Elementary Education*, 9(1), 68–78. <https://doi.org/10.23887/ijee.v1i1.89778>
- Beaumont, N. E. (2025). Creative Videomaking in Diverse Primary Classrooms: Using Drama and Technology to Enhance Oral and Digital Literacy. *Education Sciences*, 15(4), 428. <https://doi.org/10.3390/educsci15040428>
- Caella, L. A., & Yulianto, S. (2024). Keefektifan Media Video Animasi untuk Meningkatkan Minat dan Hasil Belajar Mata Pelajaran IPAS Kelas IV SD Negeri Klumprit 01 Nusawungu Kabupaten Cilacap. *Jurnal Penelitian Pendidikan IPA*, 10(9), 6621–6630. <https://doi.org/10.29303/jppipa.v10i9.8445>
- Chrisyarani, D. D., Setiawan, D. A., & Yoel, T. C. (2022). Analisis Kepraktisan Media Video Komik Animasi Berbasis Literasi Berbahasa Siswa SD. *Jurnal Jendela Pendidikan*, 2(04), 571–579. <https://doi.org/10.57008/jjp.v2i04.317>
- Diah, D. U. N., Surya, A. F., & Susiloningsih, E. (2024). Application of Animated Video Learning Media to Enhance Elementary Students' Ability to Understand Intrinsic Elements of Short Stories. *EduStream: Jurnal Pendidikan Dasar*, 8(2), 100–112. <https://doi.org/10.26740/eds.v8n2.p100-112>
- Dursun, F., & Aykan, A. (2025). Exploring Teachers' Narratives: Challenges and Strategies for Enhancing the Teaching Process. *Sage Open*, 15(1), 21582440251332557. <https://doi.org/10.1177/21582440251332557>

- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the Role of Digital Technologies in Education: A Review. *Sustainable Operations and Computers*, 3(May), 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hidayah, M. D., Ruhiat, Y., & Rusdiyani, I. (2023). Pembelajaran Materi Gerak Benda untuk Siswa SD dengan Media Canva Video. *Jurnal Penelitian Pendidikan IPA*, 9(6), 4303–4309. <https://doi.org/10.29303/jppipa.v9i6.3122>
- Istiqomah, I., & Adi, B. S. (2024). The Effect of Using Powtoon Animation Learning Media on Solar System Material on the Learning Outcomes of Class VI Elementary School Students. *Jurnal Penelitian Pendidikan IPA*, 10(3), 1450–1457. <https://doi.org/10.29303/jppipa.v10i3.5909>
- Kleotodimos, A. (2024). Computer-Animated Videos in Education: A Comprehensive Review and Teacher Experiences from Animation Creation. *Digital*, 4(3), 613–647. <https://doi.org/10.3390/digital4030031>
- Kulsum, M., & Isdaryanti, B. (2024). Canva-Based E-Comic on the Dangers of Plastic Waste Environment as Learning Media for IPAS Effectively Improve Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, 10(10), 7199–7208. <https://doi.org/10.29303/jppipa.v10i10.8269>
- Kwangmuang, P., Jarutkamolpong, S., Duangngern, P., Gessala, N., & Sarakan, P. (2024). Promoting Analytical Thinking Skills Development in Elementary School Students Through Animated Cartoons. *Computers in Human Behavior Reports*, 15(August), 100467. <https://doi.org/10.1016/j.chbr.2024.100467>
- Liu, A., & Jin, B. (2025). The Role of Multimedia Elements in Brand Design: Impacts on Brand Loyalty and Awareness. *International Journal of e-Collaboration*, 21(1), 1–17. <https://doi.org/10.4018/IJeC.387828>
- Mambrey, S., Schreiber, N., & Schmiemann, P. (2022). Young Students' Reasoning About Ecosystems: The Role of Systems Thinking, Knowledge, Conceptions, and Representation. *Research in Science Education*, 52(1), 79–98. <https://doi.org/10.1007/s11165-020-09917-x>
- Mayer, R. E., & Moreno, R. M. (2010). Nine Ways to Reduce Cognitive Load in Multimedia Learning. *Educational Psychologist: A Special Issue of Educational Psychologist*, 38(May 2012), 43–52. <https://doi.org/10.4324/9780203764770-6>
- Mekonnen, Z. B., Yehualaw, D. D., Mengistie, S. M., & Mersha, B. S. (2024). The Effect of 7E Learning Cycle Enriched with Computer Animations on Students' Conceptual Understanding and Overcoming Misconceptions. *Journal of Pedagogical Research*, 8(2). <https://doi.org/10.33902/JPR.202425017>
- Mirzaei, A., & Moore, T. (2014). What Are the Driving Forces of Bank Competition Across Different Income Groups of Countries? *Journal of International Financial Markets, Institutions and Money*, 32, 38–71. <https://doi.org/10.1016/j.intfin.2014.05.003>
- Mnguni, L., & Moyo, D. (2021). An Assessment of the Impact of an Animation on Biology Students' Visualization Skills Related to Basic Concepts of Mitosis. *Eurasia Journal of Mathematics, Science and Technology Education*, 17(8), em1997. <https://doi.org/10.29333/ejmste/11116>
- Muawanah, U., Marini, A., & Sarifah, I. (2024). The Interconnection between Digital Literacy, Artificial Intelligence, and the Use of E-Learning Applications in Enhancing the Sustainability of Regional Languages: Evidence from Indonesia. *Social Sciences & Humanities Open*, 10, 101169. <https://doi.org/10.1016/j.ssaho.2024.101169>
- Mukaromah, L., Sutarto, J., Subali, B., & Raihan, P. D. (2024). Development of Interactive Food Web Learning Media to Improve Mastery of Science Concepts and Student Creativity. *Jurnal Penelitian Pendidikan IPA*, 10(5), 2674–2678. <https://doi.org/10.29303/jppipa.v10i5.6901>
- Muslim, S., Arum, A. P., & Fajarianto, O. (2022). Development of Information and Communication Technology Learning Media. *JTP - Jurnal Teknologi Pendidikan*, 24(3), 381–388. <https://doi.org/10.21009/jtp.v24i3.31522>
- Muzaki, F. I., Barus, Y. K., Tohir, M. A., Ahdhianto, E., Utama, C., & Putra, A. P. (2023). Language Instruction in Indonesian Elementary Schools Through Computer Assisted Language Learning: A Library Research Review. *New Language Dimensions*, 4(1), 11–22. <https://doi.org/10.26740/nld.v4n1.p11-22>
- Nefillia, R. C. (2021). Validity Canva Video Media Integrated Thematic Learning Based on PBL Models in Elementary Schools. *Jurnal Gentala Pendidikan Dasar*, 7(1), 132–160. <https://doi.org/10.22437/gentala.v7i1.18346>
- Nisyaa, F., Suratno, S., & Widodo, S. T. (2025). Development of Canva-Based Interactive Learning Media for Elementary School IPAS Learning. *Jurnal Penelitian Pendidikan IPA*, 11(1), 656–663. <https://doi.org/10.29303/jppipa.v11i1.8503>
- Novianti, N., Khaulah, S., & Abdillah, T. R. (2023). Development of 2D Animation Learning Video Media for the TAPPS Learning Model to Reduce Mathematics Phobia. *Jurnal Penelitian Pendidikan IPA*, 9(11), 9509–9515. <https://doi.org/10.29303/jppipa.v9i11.4962>
- Putri, S. A., Rohmani, R., Apriza, B., & Elizar, E. (2024). Effectiveness of Using Animation Videos in Science Learning in Elementary Schools: A Systematic

- Literature Reviews. *Indonesian Journal of Educational Research and Review*, 7(3), 667–678. <https://doi.org/10.23887/ijerr.v7i3.82242>
- Rabiasa, S. A., Paramata, D. D., Yusuf, M., Odja, A. H., Supartin, S., & Setiawan, D. G. E. (2024). Development of Animated Video Learning Media in Increasing Learning Interest of Deaf Students at Special Schools. *Jurnal Penelitian Pendidikan IPA*, 10(7), 4327–4332. <https://doi.org/10.29303/jppipa.v10i7.8000>
- Rifai, M. I. (2026). Development of Canva-Based Interactive Learning Media for Teaching Pancasila to Elementary School Students. *Indonesian Journal of Innovative Teaching and Learning*, 3(1), 34–42. <https://doi.org/10.64420/ijitl.v3i1.462>
- Rosemarry, L. A., & Isdaryanti, B. (2024). Adobe Animate-Based Learning Media for IPAS Class V Elementary School Tlogosari Kulon 05 Effective and Improve Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, 10(8), 5953–5960. <https://doi.org/10.29303/jppipa.v10i8.8268>
- Saad, R. B., Garcia, A. L., & Garcia, J. M. C. (2025). Mapping Constructivist Active Learning for STEM: Toward Sustainable Education. *Sustainability*, 17(13), 6225. <https://doi.org/10.3390/su17136225>
- Salfina, S., Nurmaliah, C., Pada, A. U. T., Hasanuddin, H., & Abdullah, A. (2021). Penerapan Model Pembelajaran Problem Based Learning dipadu Media Animasi untuk Meningkatkan Keterampilan Proses Sains, Motivasi dan Hasil Belajar Biologi di SMAN Aceh Utara. *Jurnal Penelitian Pendidikan IPA*, 7(SpecialIssue), 266–271. <https://doi.org/10.29303/jppipa.v7ispecialissue.1072>
- Sanders, C. E., Byrd, A. R., Gibson, K. E., Golson, A., Lamm, K. W., & Lamm, A. J. (2023). Teaching Systems-Thinking Concepts with Hypothetical Case Scenarios: An Exploration in Food-Systems Science Education. *Foods*, 12(14), 1–20. <https://doi.org/10.3390/foods12142663>
- Schoenherr, J., Strohmaier, A. R., & Schukajlow, S. (2024). Learning with Visualizations Helps: A Meta-Analysis of Visualization Interventions in Mathematics Education. *Educational Research Review*, 45(September), 100639. <https://doi.org/10.1016/j.edurev.2024.100639>
- Silfiani, S., Jasruddin, J., & Amin, B. D. (2022). Development of VideoScribe Assisted Learning Media to Improve Understanding of Physics Concepts. *Jurnal Penelitian Pendidikan IPA*, 8(6), 2995–3000. <https://doi.org/10.29303/jppipa.v8i6.2064>
- Staneviciene, E., & Žekienė, G. (2025). The Use of Multimedia in the Teaching and Learning Process of Higher Education: A Systematic Review. *Sustainability*, 17(19), 8859. <https://doi.org/10.3390/su17198859>
- Teplá, M., Teplý, P., & Šmejkal, P. (2022). Influence of 3D Models and Animations on Students in Natural Subjects. *International Journal of STEM Education*, 9(1). <https://doi.org/10.1186/s40594-022-00382-8>
- Wennersten, L., Wanselin, H., Wikman, S., & Lindahl, M. (2023). Interpreting Students' Ideas on the Availability of Energy and Matter in Food Webs. *Journal of Biological Education*, 57(1), 3–23. <https://doi.org/10.1080/00219266.2020.1858935>