

DEVELOPMENT OF DIGITAL COMICS WITH THE HELP OF CANVA ON FOOD WEB MATERIAL FOR CLASS V STUDENTS

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ARTICLE HISTORY

Received : 07-08-2025

Revised : 15-09-2025

Accepted : 05-10-2025

KEYWORDS

Development,
Digital Comics,
Canva, Food
Webs.

ABSTRACT

This study aims to develop innovative learning media in the form of Canva-assisted digital comics on food web material for fifth-grade elementary school students. This study uses the *Research and Development* (R&D) method with the ADDIE model which is limited to the *Development stage*. The research subjects consisted of material experts, media experts, and linguists. The research procedure started from the stages of Needs Analysis, Storyboard Design, and Product Development using the Canva application. The resulting product was then validated by material experts and media experts using a feasibility questionnaire instrument. Qualitative data (input and suggestions) were analyzed descriptively, while quantitative data (percentages) were analyzed using a Likert scale. The validation results showed that this digital comic media had a very high level of validity. Assessments from material experts were in the range of 87.5%-100% and media experts in the range of 93.75%-100%, both of which were included in the "Very Valid" category. Validation results from linguists showed that Canva-assisted digital comic products on food web material had a very high level of validity. All assessed aspects scored above 87%, indicating the product is suitable for use without major revisions. Therefore, the developed digital comic is highly suitable and can be used as an effective, engaging learning medium that meets student needs and the curriculum.

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INTRODUCTION

The development of digital technology today has brought significant changes to various aspects of human life, one of which is education. The use of technology in the learning process is a crucial factor in supporting learning effectiveness. The world of education is required to continuously innovate to keep up with global dynamics and advances in various other fields. However, the use of technology in learning not only has positive impacts but can also have negative consequences if its use is not optimized (Ihsanudin, 2024).

Technological advances in education have given rise to various innovations that support the effectiveness of the teaching and learning process. One major impact is the increasing variety of available learning media. Learning processes that previously focused on face-to-face learning are now shifting toward digital interactions. This requires learning strategies aligned with technological developments to ensure the teaching and learning process remains relevant and sustainable. UNESCO, through "The International Commission on Education for the Twenty-First Century," recommends four key principles for 21st-century learning: Learning to Know, Learning to Do, Learning to Be, and Learning to Live Together. These principles emphasize the importance of educator

competence in integrating Information and Communication Technology (ICT) into learning activities (Mulyani & Haliza, 2021).

Essentially, learning is a dynamic interaction between educators and students, which can occur face-to-face or through digital media. Learning media plays a crucial role because it can optimize student interest, motivation, and learning outcomes. Selecting the right media allows educators to present material in a more engaging format, beyond conventional methods like lectures. This allows students to more easily understand the material in depth (Putri & Sari, 2022).

Based on interviews and observations at SD Negeri 85 Pekanbaru on February 11, 2025, it was found that the school had implemented the Independent Curriculum and had quite complete facilities. However, educators have not optimized the use of available learning resources. The media used are still limited to PowerPoint presentations, learning videos from YouTube, and student books. This condition has an impact on low student learning motivation. Many students experience boredom, low interest, and lack of participation in learning, especially in science material on the topic of ecosystems. The results of the daily assessment (PH) on the food web material showed that out of 32 students, only 10 students (30%) achieved scores above the Minimum Completion Criteria (KKM), while 22 students (70%) were still below the KKM.

This situation indicates that the learning strategies used are still ineffective in improving student understanding. The minimal use of innovative learning media, such as digital comics, is one of the main causes of low student engagement in learning. Digital comics, as a form of interactive learning media, can be a solution to increase student motivation, interest, and understanding. The visual and narrative characters in comics can present learning materials in a simpler, more engaging, and easier-to-understand manner. Several studies have shown that the use of digital comics in learning can improve learning outcomes and active student engagement (Wardani et al., 2021; Rizki & Khasanah, 2023). The concept of comic-based learning emphasizes the presentation of material through a series of images structured within a storyline; thus, this medium can improve student understanding and learning motivation (Siregar, 2021).

According to Raiman (in Damayanti, 2020:2), digital comics are comics that provide story illustrations through a specific plot in digital form and can be used through electronic devices, thus functioning as a learning medium for students. The use of digital comics is very suitable for learning ecosystem topics because this media is presented practically through a series of interesting images and short narratives that are easy to understand. In addition, digital comics are also equipped with practice questions in the form of quizzes that are appropriate to the material that has been presented, so that it can increase student interest and enthusiasm in the learning process. In line with technological developments, digital comics can be developed using graphic design platforms such as Canva which provides illustration and audiovisual features.

The Canva application is a design platform that uses drag-and-drop techniques and provides various features such as fonts, images, and shapes that can be accessed during the design process. In general, Canva can be used for various graphic needs, including creating flyers, posters, digital comics, and other learning media with attractive images and templates (Isnaini et al. 2021). According to Wulandari & Mudinillah (2024), Canva is very popular among teachers as a tool for creating learning media. The variety of attractive templates available allows teachers to develop learning media creatively, resulting in more communicative materials and visualizations that can attract students' attention. Based on this background, this study aims to develop digital comic-based learning media that is attractive and effective in increasing student motivation and learning outcomes in science.

RESEARCH METHODS

This research is a developmental research with a qualitative and quantitative approach, using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. However, the research was limited to the product development stage in the form of a Canva-based digital comic, considering the limited research time. The research activities were carried out at SDN 85 Pekanbaru, Jl. Limbungan, Lembah Sari, Rumbai Pesisir District,

Pekanbaru City, on February 11, 2025.

The research procedure began with a needs analysis stage through observation of the learning process, interviews with teachers, and identification of facilities and infrastructure at the school. This analysis aimed to identify learning problems that could be addressed with digital comics. Next, in the design stage, the researcher compiled a storyboard and initial draft of the digital comic on the food web topic, which included the display format, storyline, and visual elements. The development stage was carried out by realizing the design into a tangible product using the Canva application. This process included scriptwriting, visual design creation, dialogue composition, layout arrangement, and the addition of graphic elements to make the media more communicative and engaging.

The resulting product was then validated by three groups of experts: material experts, language experts, and media experts. This validation used a feasibility questionnaire to assess aspects of content, language, appearance, and the suitability of the media to student characteristics. The results of the assessment, criticism, and suggestions from the validators were analyzed and then used to revise the product. After going through the revisions, the media was trialed on a limited basis with approximately 30–32 fifth-grade students at SDN 85 Pekanbaru. This trial aimed to determine the level of practicality of the media, which was measured through a questionnaire of student and teacher responses to the ease of use and benefits of digital comics in learning.

The research data sources consist of primary and secondary data. Primary data were obtained directly from observations, interviews, expert validation sheets, and teacher and student response questionnaires. Meanwhile, secondary data were collected through literature studies in the form of books, articles, journals, and relevant online sources. The research subjects were expert validators (material, language, media), class teachers, and fifth-grade students. Data collection techniques included interviews, validation sheets, and response questionnaires. The instruments used were validation sheets from material experts, language experts, and media experts, as well as teacher and student response questionnaires compiled based on aspects of content, language, appearance, and benefits of learning media. Qualitative data were analyzed descriptively based on input and suggestions from validators and respondents. Meanwhile, quantitative data were analyzed using a Likert scale to obtain the percentage of the product's validity and practicality levels. Validity criteria were determined based on percentage intervals, as follows:

Validity and Revision Level	
Presentation	Valid criteria
76-100%	Very Valid
56-75%	Valid
40-55%	Less Valid
0-39%	Invalid

Source (Permata & Bhakti, 2020)

RESEARCH RESULTS

This research aims to develop a Canva-assisted digital comic on the topic of food webs for fifth-grade elementary school students. The developed product was validated by two experts, namely a material expert and a media expert. The validation process was carried out to ensure the suitability of the material content with the curriculum, scientific accuracy, completeness, integration between visuals and content, and its usefulness for students. In addition, media aspects were assessed in terms of visual appearance, component integration, navigation clarity, creativity, and platform suitability. The results of this research and development are designed to develop a Canva-Assisted Digital Comic on the Food Web Material for Fifth-grade students at SDN 85 Pekanbaru. This research uses the Analysis, Design, Develop (ADD) development model, which consists of three main stages: analysis, design, and development. The following is a description of the results and discussion of each stage.

1. Analysis Stage

In the initial stage, researchers carried out a series of analysis activities to identify the needs and problems that exist at SDN 85 Pekanbaru.

- Needs Analysis:** Based on the needs analysis, it was found that teachers at SDN 85 Pekanbaru face challenges in delivering food web material in an engaging and interactive manner. The learning media used is still limited to textbooks, resulting in students being passive and having difficulty understanding complex concepts. Therefore, innovative learning media are needed that can attract students' interest and improve their understanding.
- Learning Process Observations:** Observations conducted in fifth grade showed that students had difficulty

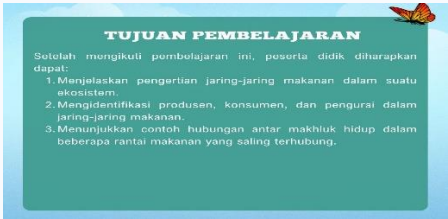
identifying the interrelationships between living things in an ecosystem. They often confused producers, consumers, and decomposers, as well as the interrelationships between one food chain and another. This indicates that conventional learning methods are less effective for this topic.

c. Infrastructure Analysis: The infrastructure analysis shows that the school has adequate internet access and devices such as computers or tablets to support digital media-based learning. This allows for the development and implementation of digital learning media such as comics created using Canva.

The results of this analysis stage provide a strong basis for designing and developing digital comic media that are relevant, accurate, and appropriate to student needs and school conditions.

2. Design Stage

This design stage aims to develop a conceptual framework for the digital comic. Based on the analysis, the researchers designed the storyline, characters, and visuals to be used in the comic. This design concept was outlined in a *storyboard* containing descriptions of each slide, as presented in Table 2.1.

Slide	Sketch	Description
1		Cover of a digital comic with the title “Digital Comic Food Web”.
2		Contains learning objectives to be achieved through digital comics.
3		This slide shows an introduction to the main characters in the digital comic story.

4		This slide depicts the morning atmosphere at school when students are preparing to take part in learning outside the classroom.
5		This slide is the beginning of the educational section. In the slide, Mouse Deer begins explaining the concept of food webs.
6		This slide deepens students' understanding by explaining that the food chain is not just one path.

https://www.canva.com/design/DAGqDT4ZxS8/kCXUgnwXAOltmwSu7eJuVw/edit?utm_content=DAGqDT4ZxS8&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

storyboard design serves as a visual and narrative guide to ensure a logical storyline and clear delivery of learning materials.

3. Development Stage

This stage represents the realization of the previously developed design. Researchers used the Canva platform to create digital comic products because of its easy-to-use features and a variety of engaging visual elements. The steps taken at this stage are as follows:

- Determining the Theme and Material: The theme "Food Web Adventures in the Urban Forest" was chosen to make the material more relevant and engaging for students. The material was simplified for ease of understanding, without diminishing the essence of the food web concept.
- Writing a Comic Script: The script is based on a *storyboard*, with simple dialogue and interactive narration. The use of the character Si Kancil aims to create a familiar and enjoyable impression.
- Creating Visual Designs in Canva: Visual designs are created by selecting a suitable comic template and

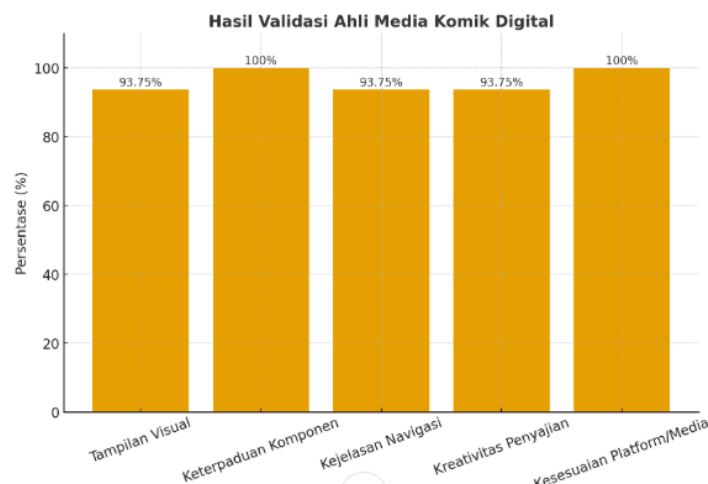
adding relevant characters, backgrounds, and icons. Each slide is tailored to the storyline.

- d. Entering Text and Organizing the Flow: Dialogue text is inserted into *speech bubbles* and arranged for readability. Slides are arranged sequentially to form a coherent storyline.
- e. Proofreading and Revision: The finished comic is proofread for errors in information, spelling, or grammar. Minor revisions are made to improve the visual and narrative quality.
- f. Export and Publication: The final product is exported as a digital file (PDF) and shared with students via the learning platform or the provided access *link /QR code*.

The result of this development phase is a digital comic learning medium ready for implementation and further testing. This comic is expected to be an innovative solution to increase student interest and understanding of food webs. Furthermore, based on validation results, the Canva-assisted digital comic development demonstrated excellent quality in terms of both media and content.

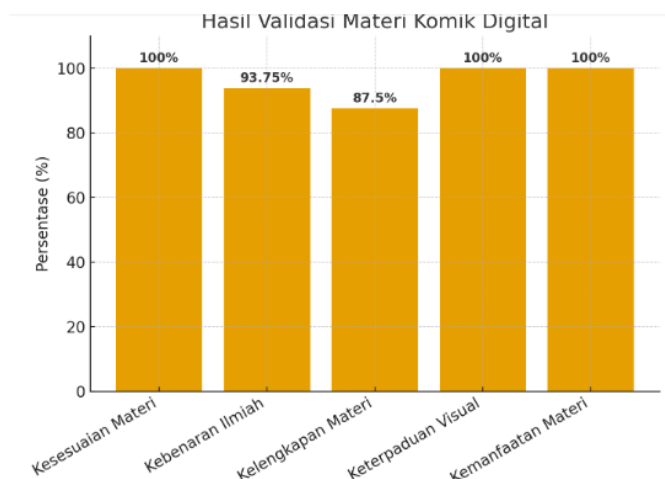
1. Media Validation Results

Five aspects were assessed: visual appearance, component integration, navigation clarity, presentation creativity, and platform/media suitability. The highest percentage was for component integration and platform/media suitability, with a score of 100% (very valid). Other aspects received a score of 93.75% (very valid). This indicates that the digital comic media developed has an attractive design, is easy to use, and is suitable for the platform used. The following is a graph from media experts:



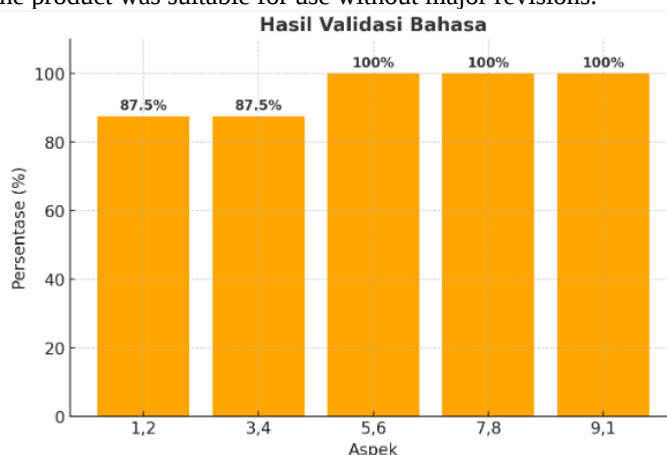
2. Material Validation Results

The material assessment included aspects of material suitability, scientific accuracy, completeness, integration with visuals, and usefulness. The aspects of material suitability, integration with visuals, and usefulness received a score of 100% (very valid). The scientific accuracy received a score of 93.75% (very valid). The completeness of the material received a score of 87.5% (very valid), which is the lowest score but still falls into the very valid category. This means that the material presented in the digital comic is not only scientifically correct but also complete, useful, and easy for students to understand.



3. Language Validation

Language validation was conducted to assess readability, sentence clarity, spelling, and language appropriateness for the students' developmental level. Validation results from linguists indicated that the Canva-assisted digital comic on food webs had a very high level of validity. All assessed aspects achieved scores exceeding 87%, indicating the product was suitable for use without major revisions.



The validation results show that Canva-assisted digital comics are very suitable for use in learning food web material in grade V. This media is not only attractive in terms of appearance, but also appropriate in terms of material and useful for improving student understanding.

DISCUSSION

The results of research on the development of digital comics using Canva on food webs indicate that the resulting product has a very high level of validity in both media and material aspects. This confirms that digital comics can be used as an innovative learning medium that can address the challenges of science learning in elementary schools, especially on abstract material such as food webs. According to the cognitive learning theory proposed by Bruner, learning will be more meaningful if abstract concepts are visualized in the form of iconic or symbolic representations that are easy for children to understand (Bruner, 1966). In this context, the use of digital comics can concretize the concept of food webs through characters, storylines, and interesting visualizations, making it easier for students to understand the relationship between producers, consumers, and decomposers in the ecosystem.

Furthermore, the use of Canva as a development platform demonstrates that digital technology can be an effective tool for creating interactive learning media. Canva provides visual features, icons, and templates that support teachers' creativity in producing media that is not only informative but also communicative. Similarly,

Laili Rahmi's (2021) research on the influence of instructional videos on critical thinking skills of science students in Indonesian cultural heritage found that the use of interactive digital media can increase student engagement and help them develop deeper conceptual understanding. This suggests that both videos and digital comics play a significant role in stimulating student learning interest through a strong visual approach.

From a content perspective, validation by material experts indicates that the content presented in the digital comic aligns with the curriculum, is scientifically sound, and beneficial for students. These findings align with Arsyad's (2019) assertion that good learning media must meet the principles of accuracy, relevance to learning objectives, and integration between visuals and content. The presence of the Kancil character in the comic, for example, provides a familiar narrative touch for students while also serving as cognitive scaffolding to facilitate understanding of abstract material.

Furthermore, the results of this study also reinforce the view that comic-based media can reduce student boredom in learning. Comics, as a form of educational storytelling, not only facilitate knowledge transfer but also foster students' intrinsic motivation to learn more actively. This is reinforced by Laili Rahmi's (2022) findings in her study on the use of visual media to improve elementary school students' learning outcomes, which stated that image- and story-based media can improve students' focus, memory retention, and emotional engagement during the learning process. Thus, the Canva-assisted digital comics developed in this study have the same potential to create a fun and meaningful learning experience.

Furthermore, in terms of development, the ADD (Analysis, Design, Develop) model has proven effective in producing systematic learning products that meet student needs. During the analysis phase, it was found that fifth-grade students still struggled to understand the reciprocal relationships within the ecosystem. This is consistent with Laili Rahmi's (2023) research on the use of interactive digital media in thematic learning, which emphasizes the importance of analyzing student needs so that the developed media truly addresses real-world problems. By conducting initial analysis, storyboard design, and product development in Canva, the researchers successfully produced media that was not only theoretically valid but also practically relevant.

Thus, this discussion demonstrates that the development of Canva-assisted digital comics has a strong theoretical and empirical basis for improving the quality of learning. This product not only facilitates understanding of the concept of food webs but also aligns with developments in educational technology that demand digital media innovation. The use of digital comics is expected to significantly increase student motivation, engagement, and learning outcomes if implemented more widely in the classroom.

CONCLUSION

This research produces learning media in the form of digital comics assisted by Canva on the material of food webs for fifth grade elementary school students. The development process was carried out through three stages of the ADD model (Analysis, Design, Develop). The validation results show that the developed media has a very high level of validity, both from the media and material aspects. Media experts gave an assessment in the range of 93.75%–100% (very valid category), while material experts gave an assessment of 87.5%–100% (very valid category) and Validation results from language experts show that the digital comic product assisted by Canva on the material of food webs has a very high level of validity. All aspects assessed obtained a percentage of more than 87% . This proves that the developed digital comic is suitable for use as an interesting, easy-to-understand learning medium, and in accordance with the curriculum. In addition, this digital comic is able to overcome teachers' obstacles in explaining the abstract concept of food webs and increase student learning motivation through an interactive visual approach. The novelty of this research lies in: Integration of Canva as an educational design platform: In contrast to previous research which mostly used print or video media, this research utilizes Canva to produce digital comics that are interactive, flexible, and easily accessible to students.

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