Vol. 9, No. 1 (2025) 9-18 ISSN: 2597-4866
Indonesian Journal of Primary Education

Development of an E-Module on Animal Locomotor Organs for Fifth-Grade Students Based on Canva and Liveworksheet

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Submitted/Received 27 December 2024; First Revised 28 December 2024; Accepted 18 January 2025
First Available Online 1 June 2025; Publication Date 1 June 2025

Abstract

The 21st century demands that educators transform conventional teaching methods into digital formats. Teaching modules provided by teachers in printed form often fail to effectively facilitate students' understanding of the material, particularly on the topic of animal locomotion organs. This study aims to develop an innovative and feasible E-Module based on Canva and Liveworksheet, tailored for fifth-grade elementary school students. The research employs the ADDIE model, comprising five stages: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. Data collection techniques included observation, interviews, and questionnaires with a rating scale. The research subjects were fifth-grade teachers and students. Media validation was conducted through assessments by subject matter experts, design experts, and learning communication media experts. Results showed that the subject matter validation achieved a score of 92% (very feasible category), design validation achieved a score of 96% (very feasible category), and media communication validation achieved 95% (very feasible category). The E-Module based on Canva and Liveworksheet is concluded to be highly suitable for teaching the topic of animal locomotion in fifth-grade elementary school.

Keywords: *E-Module, Canva, Liveworksheet.*

INTRODUCTION

The 21st century differs significantly from previous centuries, marked by rapid advancements in Information and Communication Technology (ICT). These advancements demand that educators possess both theoretical and applied knowledge to connect various domains of expertise. Teachers must be more creative, adaptive, and capable of transforming this knowledge into valuable skills (Zubaidah, 2016, pp. 2–5). Essential 21st-century teaching competencies include: (1) critical thinking skills, (2) problem-solving abilities, (3) communication and collaboration, (4) creativity and innovation, and (5) information, communication, and technology literacy. Educators today face increasingly diverse students, more complex subject matter, elevated teaching standards, and higher-order thinking skill expectations. This requires teachers to excel not only in intelligence but also in creativity and action-based intelligence (hard skills and soft skills).

The field of education continually progresses to create learning media, resources, methods, strategies, and processes that are interactive, inspiring, enjoyable, challenging, and motivating for students. Learning media serve as integral tools to support the teaching-learning process and enhance the transformation of learning itself. Media in education cannot be separated from teaching methods, forming an essential integration to achieve learning objectives.

Instructional media play a vital role by presenting information more precisely, clearly, and engagingly for students. Developing quality instructional media is a critical effort to improve the learning process and ultimately enhance student learning outcomes. Designing and developing instructional media require a systematic and holistic process based on instructional system

design principles. "Systematic" implies structured and sequential steps, while "systemic" indicates comprehensiveness.

In general, instructional media are teaching aids that stimulate learners' thoughts, feelings, attention, and skills, fostering effective learning processes. According to Briggs (1977), instructional media include physical tools to convey educational content, such as books, films, and videos. The National Education Association (1969) also defines instructional media as communication tools in print and audio-visual forms, encompassing hardware technology.

Instructional media vary widely, ranging from narrative, interactive, to productive media. However, using all media simultaneously is inefficient. Thus, selecting appropriate media to achieve predetermined learning objectives is crucial. Media are integral to the learning process, not merely as teaching aids but as inseparable components of instruction. The choice of media must align with other elements of instructional design. While teaching can occur without aids, learning without media is nearly impossible. Teachers are expected to create diverse learning experiences by offering various media and learning resources.

Field observations reveal that many teachers still rely on printed modules as learning resources. These printed materials often appear monotonous and fail to capture students' attention, as they primarily consist of text and static images. To address this, teachers need to develop media and learning resources that foster interactive learning. One potential solution is the use of electronic modules (E-Modules).

According to Purwaningtyas (2017), an E-Module is a form of teaching material tailored to specific content characteristics, systematically compiled into a cohesive unit that can be independently and actively studied by learners at their own pace, without requiring direct teacher guidance. E-Modules represent a modification of conventional modules by integrating information technology, making them more engaging and interactive. E-Modules allow for multimedia elements such as images, animations, audio, and video, as well as interactive evaluation tools, enhancing students' engagement with the content.

Characteristics of E-Modules include:

- Self-directed learning capability,
- Content packaged in concise, complete units,
- Availability of exercises and assignments,
- Up-to-date and contextual content,
- Clear, simple, and communicative language,
- Self-assessment tools for learners.

Previous studies on E-Module development, such as Ana Puspita, Muhammad Nazar, and Reza (2021), demonstrated the effectiveness of Canva-designed E-Modules for basic chemistry experiments. Similarly, Kuncahyono (2018) validated thematic E-Modules for elementary schools, achieving high content, language, and media validity scores. Another study by Intan Ayu Wilujeng et al. (2021) on Canva-based E-Modules about animals' benefits for humans reported high feasibility, practicality, and effectiveness scores, demonstrating their potential as alternative teaching aids to deliver engaging content.

This study aims to build on these findings by developing a Canva and Liveworksheet-based E-Module for teaching animal locomotion to elementary students. Unlike previous studies, this research integrates Liveworksheet, a platform that allows the creation of interactive worksheets and digital exercises, enhancing the E-Module's functionality and appeal.

Based on this background, this study seeks to develop and produce a Canva and Liveworksheet-based E-Module for teaching animal locomotion to fifth-grade elementary school students.

RESEARCH METHODOLOGY

The research method utilized in this study follows the ADDIE model, which consists of five stages: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation (Tegeh & Kirna, 2013). The research subjects included fifth-grade students and teachers from two elementary schools in Tasikmalaya Regency, namely SDN

Pamijahan and SDN Sindangrasa, with a total of 21 student participants. Data collection techniques employed were observation, interviews, and questionnaires. The data were analyzed using a rating scale ranging from 1 to 5. A rating scale is a closed-ended survey method used to represent respondents' feedback in specific research contexts (Hayati, 2021).

The research stages are illustrated in Figure 1 below:

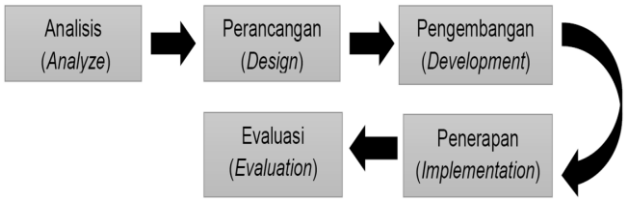

Figure 1
Stages of the Research and Development (R&D) Model Based on ADDIE (Pratama & Saregar, 2019)

Based on the ADDIE stages, the procedures employed in this research were as follows:

1. **Analysis**
   - Conducted an initial analysis to identify potential problems in schools through observations of learning activities and interviews with teachers and students.
   - Established development objectives based on the issues identified in the interviews.
   - Defined the research subjects as fifth-grade teachers and students.
   - Identified resources necessary for developing digital media.
   - Prepared a work plan for conducting a mini-research project.
2. **Design**
   - Prepared research instruments.
   - Designed the E-Module based on Canva and Liveworksheet, incorporating multimedia elements such as videos, audio, images, and text, along with exercises.
3. **Development**
   - Created the media, starting with the design of the E-Module cover and content using Canva.
   - Edited videos and supporting materials for inclusion in the E-Module.
   - Compiled the content into the Canva and Liveworksheet-based E-Module.
   - Conducted media validation through assessments by subject matter experts, design experts, and media experts.
4. **Implementation**
   - Integrated the E-Module into classroom teaching and observed its use in learning activities.
   - Gathered feedback through interviews and questionnaires to evaluate teachers' and students' responses to the E-Module.
5. **Evaluation**
   - Analyzed data from interviews and questionnaires to refine the E-Module and improve its overall quality.

Table 1
Interpretation of Likert Scale Score Results

Scale Value	Category of Media Feasibility	
	Score	Category of Media Feasibility
1	< 21%	Very Unfeasible
2	21-40 %	Unfeasible
3	41-60%	Feasible
4	61-80%	Suitable
5	81-100%	Highly Suitable

% Response Calculation: = n/(N) x 100
Where:
% = Response Percentage
n = Total score of criteria
N = Maximum possible score

RESULTS AND DISCUSSION

The product developed in this study is an E-Module based on Canva and Liveworksheet for teaching animal locomotion. The development process followed the ADDIE model, which includes five stages: analysis, design, development, implementation, and evaluation.

Analysis

Performance Analysis

The E-Module based on Canva and Liveworksheet was developed as an accessible platform in the form of a digital link. Prior to this research, the integration of electronic modules in teaching had not been explored in the studied schools, even though blended and face-to-face learning formats require technology-enhanced learning tools. Classroom observations revealed that teaching animal locomotion to fifth-grade students relied on static resources such as pictures and textbooks, which were insufficient to engage or motivate students. The proposed E-Module was intended to address these limitations by offering interactive and visually appealing digital content. However, challenges include dependence on internet connectivity and the need for supporting devices such as smartphones or laptops.

Student Analysis

Elementary school students were found to be less active in learning due to the limited interactivity of teaching media. The proposed E-Module aims to address this by promoting self-directed and active learning through interactive activities facilitated by Canva and Liveworksheet.

Content Analysis

The module is designed for the animal locomotion topic, which can be challenging for students to grasp due to its abstract nature. The topic aligns with Indonesia's 2013 Curriculum competencies (KI 3.1 and KD 4.1) for elementary education. Specifically, it covers types, structures, and functions of animal locomotion systems, along with efforts to maintain their health. For this research, the module focuses on animal locomotion and its functions to fit a single learning session.

Learning Objectives

The learning objectives were developed based on the curriculum's core and basic competencies, aiming to enhance understanding of animal locomotion among fifth-grade students.

Design

The E-Module was designed using Canva and Liveworksheet, both online platforms. Canva was utilized to create an engaging and structured background for the content, while Liveworksheet provided interactive exercises. The module features multimedia elements such as videos, images, audio, and written explanations. The interface and content were systematically designed to ensure ease of access and student engagement.

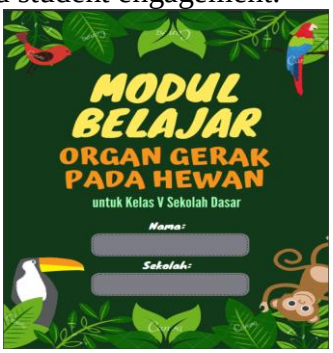

Figure 2
Cover and User Identity of the E-Module

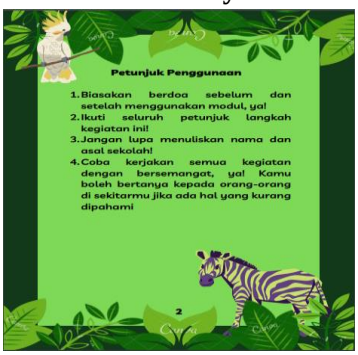

Figure 3
Instructions for Using the E-Module

Figure 4
Content of the Canva and Liveworksheet-based E-Module

The content of this Canva and Liveworksheet-based E-Module is designed to assist teachers in teaching the topic of locomotor organs in animals while fostering engaging and interactive learning activities for students. This approach aims to promote active student participation in the learning process. Below are the steps of the learning activities outlined in the module:

1. **Introductory Problem**
   Before beginning the activity, students are presented with orientation content to stimulate their prior knowledge of the material to be studied. This orientation takes the form of a conversational bubble between two animals introducing themselves and describing the characteristics and functions of their locomotor organs.
2. **Observing a Video**
   The observation activity in this Canva and Liveworksheet-based E-Module involves watching a video that explores the characteristics and functions of various locomotor organs. The video is designed to be engaging, incorporating animal sounds and content that supports students in completing subsequent activities.
3. **Identifying Locomotor Organs in Animals**
   In this activity, students are provided with an interactive feature where they identify the locomotor organs and their functions based on animals in their surroundings. Students are then asked to classify these animals into vertebrates and invertebrates. This task includes conducting an experiment and documenting their findings as part of an assessment of their scientific process skills. The experiments are designed to be conducted independently, using simple and readily available tools and materials.
4. **Practicing Matching Locomotor Organs in Animals**
   After identifying the locomotor organs of animals in their environment, students practice analyzing the locomotor organs of forest animals by matching organs with images on a

provided concept map. The Liveworksheet feature used in this activity allows students to drag and drop locomotor organ components into their corresponding positions.

5. **Creating a Model of Animal Locomotor Organs**
   In this activity, students follow a set of instructions to create a simple model of animal locomotor organs using materials available in their environment. This encourages students to be creative and make use of recyclable or readily available items, particularly emphasizing the reuse of discarded materials.

Development

The development stage of the Canva and Liveworksheet-based E-Module involves a validity assessment conducted by media and design experts through the completion of validity evaluation sheets. According to Prilianti et al. (2018), validity refers to the degree to which a product meets established standards and can be assessed through three key aspects: linguistic validity, content validity, and media validity.

In this study, validation was conducted by an elementary school supervisor and two elementary school teachers. Below are the results of the validation process that was carried out:

Table 2
Content Validation Results

Assessment Aspect	Validation Score	
	Maximum Score	Validator Score
Accuracy of content	5	5
Freedom from conceptual errors	5	4
Relevance and up-to-date material	5	5
Coverage and depth of content	5	4
Availability of references used	5	5
Total Score	25	23
Average		0,92 or 92%

Based on Table 2, the validation results for the content of the Canva and Liveworksheet-based E-Module on Animal Locomotor Organs indicate that it is classified as "highly feasible," with a final score of 0.92 or 92%. This assessment refers to the feasibility categories established by Arikunto (2019), which state that a score range of 81–100% falls into the "highly feasible" category.

Table 3
Results of Learning Design Validation

Assessment Aspect	Score Validation	
	Validation Score	Validator Score
Alignment of media delivery strategy with the characteristics of the target audience (students)	5	5
Appropriateness of media delivery strategy to facilitate ease and speed of understanding and mastery of materials, concepts, or skills	5	5
Potential to encourage students' critical thinking and problem-solving skills	5	4
Contextual relevance for real-life application aligned with the characteristics of the target audience (students)	5	5
Relative advantage: accuracy of media selection compared to other alternatives	5	5
Jumlah skor	25	24
Average		0,96 or 96 %

Based on Table 3, the validation results for the instructional design of the Canva and Liveworksheet-based E-Module on Animal Locomotor Organs indicate that it is classified as "highly feasible," with a final score of 0.96

or 96%. This assessment aligns with the feasibility categories established by Febriawati and Arikunto (2018), which state that a score range of 81–100% falls into the "highly feasible" category.

Table 4
Results of Learning Communication Media Validation

Assessment Aspects	Validation Score	
	Maximal Score	Validator Score
Clarity of narration, audio, video, animation, simulation, and alignment of language and communication style with the characteristics of the audience.	5	4
Appropriateness of narration, audio, video, animation, and simulation with the objectives and content of the material.	5	5
Attractiveness of multimedia learning packaging.	5	5
Accuracy and overall appeal of video media.	5	5
Total Score	20	19
Average		0,95 or 95%

Based on Table 4, the validation results for the Learning Communication Media of the Canva and Liveworksheet-based E-Module on Animal Locomotor Organs indicate that it is classified as "highly feasible," with a final score of 0.95 or 95%.

Following the validation process, assessments were provided by experts in content, design, and learning communication media concerning the module's content and design. There were suggestions for improvement regarding the sequence of activities, specifically that the steps should be arranged with consideration of students' cognitive processes. Initially, the first activity involved students directly identifying animals in their surroundings. However, based on cognitive characteristics, the activity should have started with more concrete content, such as showing a video presentation.

In response to this feedback, the researcher revised the module to create a new design. After further validation and improvements, the Canva and Liveworksheet-based E-Module was deemed valid. Subsequently, the implementation stage was conducted.

Implementation

After the validation process, the next stage was the implementation of the Canva and Liveworksheet-based E-Module, aimed at evaluating both the teacher and students' responses to the module, including its ease of use. According to Setiawati et al. (2017), practicality refers to the ease with which a product can be used by students or other users.

The developed Canva and Liveworksheet-based E-Module was implemented with fifth-grade students during the 2021/2022 academic year at an elementary school on June 3, 2022. The implementation process involved presenting the E-Module through a projector, after which students took turns accessing the link and completing practice exercises on computers. Below are some documented moments from the implementation of the Canva and Liveworksheet-based E-Module on Animal Locomotor Organs.

Figure 5
Implementation of the Canva and Liveworksheet-based E-Module on Animal Movement Organs

Evaluation

The final stage is evaluation. The researcher conducted an evaluation by collecting data at each stage to refine the Canva and Liveworksheet-based E-Module. To measure the effectiveness of the implementation of the Animal Locomotor Organs E-Module, an observation sheet was used to assess various aspects of the learning process. The results showed that all statements were affirmed with a "Yes" response, indicating that the teacher had explained the material using the media, students had the opportunity to ask questions and comment on the material presented, the teacher involved students in answering questions posed in the media, the media helped students remain focused on the lesson, the teacher asked students to provide feedback on the video/images in the media, the teacher added information from the media, students took notes on important points from the material, students made conclusions based on the material, and the teacher reflected on the students' conclusions.

Regarding student responses, 4 out of 5 statements were affirmed with a "Yes" response, including the following: the media helped students stay focused on the lesson, the media encouraged students to be active in the learning process, the media motivated students, and students understood the material presented through the media. However, the media did not yet help students think critically.

The final aspect, the teacher's response, was evaluated positively, with all statements affirmed by a "Yes" response. This indicated that the teacher found the media easy to use, and its use facilitated the teacher's task of delivering the material effectively.

In addition to the observation sheet, the effectiveness was also assessed through interviews with the fifth-grade teacher. The results indicated that the language used in the E-Module was understandable, the images, videos, and sounds were engaging, and the module was easy to use. The instructions within the module were clear and easy to follow, the presentation of the material was comprehensive, the terminology and sentence structure in the content were appropriate, and the learning environment became more dynamic, enjoyable, and conducive to student comprehension. The positive impact of the E-Module was that students were more motivated and interested in following the lessons. However, a negative impact was that the module required additional costs for

internet data, and there were challenges with the school's IT facilities not being sufficient for all students, with not all students having access to gadgets.

Interviews with students revealed that the images and videos provided by the teacher were clear, the presentation of the material was appropriate, the language and terminology used in the lesson were easy to understand, and the learning atmosphere after using the Canva and Liveworksheet-based E-Module was enjoyable, making the lessons more engaging.

Based on the data and descriptions provided, it can be concluded that the Canva and Liveworksheet-based E-Module on Animal Locomotor Organs is highly suitable for use in fifth-grade elementary school classrooms.

CONCLUSION

The development of the Canva and Liveworksheet-based E-Module, which was implemented in elementary schools, can be concluded as follows: The Animal Locomotor Organs E-Module based on Canva and Liveworksheet is highly feasible and can be used as an effective learning media for fifth-grade elementary school students. The E-Module, developed using Canva and Liveworksheet, was designed as an innovative educational tool in the digital era to enhance student participation in learning.

It is expected that readers gain valuable information regarding the development of the Canva and Liveworksheet-based E-Module. Recommendations for future research can be derived from some limitations identified in this study, such as the constraint of the Liveworksheet platform, which can only display 8 slides, limiting the full coverage of the E-Module's structure. The development results require further improvement to refine the Canva and Liveworksheet-based E-Module by conducting research related to the use of online platforms to create E-Modules, thus allowing for the display of more slides and ensuring the completeness of the E-Module's structure.

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