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Designing E-Learning-Based IPAS Learning Tools Using Flipbook Media

Leni Zahara[1*], Salamaini[1], Atika Ulya Akmal[1], Yesni Yenti[1], Indri Fitrianni[1]

[1] Primary School Teacher Education, Universitas Negeri Padang, Padang, Indonesia.

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Corresponding Author:
Leni Zahara
lenizahara@fip.unp.ac.id

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Abstract: IPAS learning in elementary schools, which integrates natural and social science content, requires innovative learning media that support interactive, contextual, and digital-based learning in accordance with the Merdeka Curriculum. However, learning tools used by teachers are still limited and have not optimally utilized e-learning media. Digital learning media is a technology-based means that allow the presentation of information in a multimodal manner through text, images, audio, video, animation, and interactivity. This study aims to describe the process of designing e-learning-based IPAS learning tools for Grade V elementary school using flipbook media based on the teaching module "How to Form My Indonesia", which emphasizes geographical content. This research employed a qualitative descriptive approach through several stages, including teaching module analysis, content design, learning tool structuring, and flipbook media development. Data were obtained through document analysis and the study of learning characteristics of elementary IPAS. The results indicate that the designed flipbook integrates learning objectives, core learning activities, learning videos, digital worksheets (LKPD), and assessments in a structured and interactive format. The flipbook facilitates teachers in delivering material and supports students' independent learning. This design contributes to improving the quality of e-learning-based IPAS learning in elementary schools.

Keywords: E-learning; Flipbook; IPAS elementary school; Learning tool design; Teaching modules

Introduction

Science and science learning in elementary schools plays a vital role in developing students' understanding of social and geographical phenomena in an integrated manner. In line with the spirit of the Independent Curriculum, current learning is required to be more contextual, meaningful, and experience-based (Kuwoto et al., 2024; Vidal-Esteve et al., 2026). In the digital era, teachers serve not only as transmitters of material but also as designers of learning experiences that must integrate digital literacy, critical thinking, and problem-solving from an early age (Demissie et al., 2022; Zhang & Wu, 2025). The use of digital media is crucial because it supports visualization and interactivity that printed teaching materials lack (Gusmaweti et al., 2023; Nofia Henita et al., 2023). However, the reality on the ground reveals significant gaps. Various studies indicate that science and science learning still face challenges in the form of low student motivation due to the dominance of lecture methods and the minimal use of interactive media (Sumiyem et al., 2025; Vezyroglou & Siokis, 2025).

Consequently, students' understanding of abstract concepts (Afifah & Yanti Fitria, 2024; Micallef & Newton, 2024; Nurjannah & Kusnandi, 2021), particularly the location and shape of Indonesia's territory, is suboptimal (Maulana et al., 2025; Surya et al., 2021). Furthermore, e-learning-based learning tools are rarely developed in an integrative manner; many teachers use digital media in isolation without clear alignment with the learning objectives and assessments in the teaching modules (Baziukė et al., 2025; Fitrah et al., 2025). To bridge this gap, the development of learning tools that integrate technology with systematic planning is necessary

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(Strielkowski et al., 2025; Zou et al., 2025). Interactive flipbooks have emerged as a potential solution due to their multimodal nature—the ability to integrate text, video, and interactive quizzes in a single package (Mahendri et al., 2023; Nafiah & Wuryandani, 2024). This is particularly relevant for geography material that requires high visualization, while also supporting the principle of independent learning in the Independent Curriculum.

This article aims to describe the design process for e-learning-based fifth-grade science learning tools, focusing on the "How My Indonesia Looks" teaching module. The study's main contributions lie in: providing a structured digital tool design model, demonstrating the alignment between teaching modules and digital media, and providing practical references for teachers in developing teaching tools relevant to 21st-century needs.

Method

Types of research

This study uses a qualitative descriptive approach to describe the process of designing e-learning-based IPAS learning tools using flipbook media (Haryanto et al., 2023). This approach was chosen because the research focuses on describing the process of designing learning tools, rather than on quantitative effectiveness testing. The design of qualitative research is in accordance with the goal of understanding in depth the stages of preparing learning tools based on teaching modules.

Research Subjects and Settings

The subject of the research is an IPAS learning tool for grade V elementary school which contains the material "How to Form My Indonesia". The research setting is in the form of the process of preparing and designing learning tools using teaching modules as the main reference. In addition, a limited feasibility test is also carried out through expert assessments (lecturers) and a trial of the use of media to a small number of class V students.

Research Procedures (Adaptation of the ADDIE Model)
Analysis of Teaching Modules

This initial stage focused on analyzing the components of the learning module to ensure alignment between the curriculum and the media being developed. Researchers analyzed the Learning Outcomes (CP), Learning Objectives (TP), activity flow, core material, and formative and summative assessment methods. This step was crucial to ensure that the content in the flipbook truly represented the instructional needs outlined in the Science and Science module.

Design Stage (Storyboarding)

In this stage, abstract concepts began to be translated into a technical framework through the creation of a storyboard and the determination of the flipbook's page navigation flow. Key activities included selecting visual media such as maps and infographics, searching for relevant learning videos, and drafting digital Student Worksheets (LKPD) and evaluation instruments. This design served as a blueprint before the media was fully produced.

Media Development Stage (Development)

The development stage was the realization of the design created using the selected software. Researchers created visual designs using Canva and compiled them into interactive digital flipbooks using the Heyzine platform. Features such as hyperlinks, learning videos, and digital quizzes were integrated, and the materials were processed to align with the established learning objectives.

Expert Validation Stage

After the media was developed, a validation process was conducted by lecturers or science education practitioners (teachers) to review the device's suitability. The assessment focused on material accuracy, content suitability to learning objectives, design aesthetics, and media integration with teaching modules. Expert input and suggestions were used as the basis for revising and refining the learning device before it was piloted.

Limited Trial Stage

The final stage was a small-scale implementation with a group of fifth-grade students to assess the effectiveness of the media's use in the field. The focus of this trial included students' level of understanding of the material, ease of use of the media, student response to the digital innovation, and the suitability of the visual appearance. This stage aimed to ensure that the designed device was truly functional and engaging for the target audience. Data Collection and Analysis Techniques

Data Collection Techniques

Data was collected comprehensively through four main methods: direct observation of students using the media, brief interviews with experts to deepen the validation results, questionnaires or Google Forms to gather student responses, and documentation including teaching modules, flipbook designs, and development process notes.

Data Analysis Techniques

Data analysis was conducted using descriptive qualitative techniques by segmenting the data based on planning stages, describing expert validation findings, and interpreting student responses. To strengthen the findings, simple quantitative analysis was used, including calculating the percentage of student responses, to draw conclusions regarding the feasibility and quality of the developed learning tools.

Result and Discussion

Description of Teaching Modules as a Basis for Development

The IPAS teaching module for class V with the material "*How to Form My Indonesia*" is the main basis for the design of e-learning-based learning devices. This module contains:

Learning Objectives

Students are expected to be able to: Students can get to know the location and geographical conditions of the Indonesian country; Students can show the location and geographical conditions of the Indonesian country using conventional and digital maps; Students can describe the location and geographical conditions of the Indonesian country using conventional and digital maps; Students can display the location and geographical conditions of the Indonesian country using conventional and digital maps. This goal is a reference in compiling flipbook content so that it is aligned and measurable (Asiah et al., 2025; Nugraheni et al., 2025).

Core Learning Activities

The teaching module directs students to: Observe maps and drawings of Indonesian territory; Discuss the characteristics of the archipelago shape; Gather information through exploratory activities; Completing LKPD based on visual analysis and interpretation; Perform a final evaluation to assess understanding (Islam et al., 2024; Klein et al., 2020; Schoenherr et al., 2024).

Assessments

The teaching module provides formative assessments in the form of: Digital LKPD in the form of a flipbook, Initial comprehension questions, and summative assessment in the form of evaluation questions. This assessment is then integrated into the flipbook to match the alignment principle (objective–activity–assessment).

Digital Learning Media Design
Platforms Used

The learning media was developed using: Canva, to design the visual appearance of the page, including layouts, colors, map illustrations, and supporting graphics. This finding indicates that the use of e-learning-based flipbook media, designed through visual platforms such as Canva, is highly relevant for IPAS learning, particularly in supporting the integration of social and geographical content in elementary schools; Heyzine, to turn the design into an interactive flipbook that can be accessed online; YouTube, to embed a live learning video on a flipbook page; Canva, to present materials, LKPD, and evaluations in the form of flipbook pages without links to other platforms.

Media Features in Flipbook

The e-learning learning media was developed using the Heyzine Flipbook platform with visual preparation through Canva. This flipbook contains several main features that support the IPAS learning process in the material "How to Form My Indonesia?", namely:

Interactive Pages and Digital Navigation

Flipbooks have right-left arrow button navigation and page icons that make it easy for students to move between topics without having to scroll through the entire page.

Attractive Visual Design

Each page is designed using Canva with a combination of bright colors, attractive icons, and a layout that elementary school students can easily understand (Ismail & Moh. Wardi, 2025; Mulyono et al., 2025). This visual design aims to increase students' attention and engagement during learning.

Complete Learning Materials

The content of the material includes the definition of the geographical shape of Indonesia, geographical location, physical conditions of the region, and examples of conventional and digital maps. The presentation of the material is enriched with illustrations, maps, and supporting images so that students can better understand the context (Chen et al., 2023; Staneviciene & Žekienė, 2025).

Embedded Learning Videos

Flipbooks come with learning videos from YouTube that can be played directly within the page. This feature helps students learn independently through more concrete visualizations (Pigai & Yulianto, 2024).

Digital LKPD in Flipbook

The Student Worksheet (LKPD) is loaded directly in the flipbook. LKPD is made in harmony with the learning activities in the teaching module and can be

downloaded or done by students independently (Sajidi & Parmin, 2025).

Final Evaluation Questions in the Flipbook

Learning evaluations are presented in the form of multiple-choice questions on the final page of the flipbook. Questions can be done manually by students or with the guidance of the teacher when the flipbook is projected in the classroom.

Flexible Access

Flipbooks can be accessed through laptops or mobile phones without login. This medium supports independent learning because students can reopen the material whenever needed

Test Results

Student and Teacher Responses

A limited trial was conducted on several students of class V to find out the readability, attractiveness, and ease of use of flipbooks. Based on observations and brief interviews, students showed high enthusiasm when using flipbooks because the visual appearance was attractive and the navigation was easy to understand (Ekasafitri et al., 2024; Samsu et al., 2021). Classroom teachers also give positive responses, especially because this media can display complex materials such as maps and geographical conditions in a more clear and structured way. LKPD that is integrated into the flipbook is considered to make it easier for teachers to assign assignments without having to move to another platform. Overall, the limited trial showed that flipbooks were effective in increasing student engagement and facilitating the understanding of social studies materials about the geographical shape of Indonesia (Sunzuma & Umbara, 2025)

Initial Impact on Student Comprehension

Based on the results of the questionnaire and observations: Students look more active when using digital media; The increase in initial understanding can be seen from the students' ability to answer the LKPD correctly; Students are more interested because the material is presented visually and interactively. This shows that flipbook media has a positive impact on the learning process:

Critical Discussion

Advantages of Media

Presenting material in a multimodal manner (text, images, videos); Increase student motivation and engagement; Facilitate access to learning at any time (e-learning); It has been integrated with the teaching module, so that it is in harmony with CP, TP, and assessment; Meeting the demands of 21st century learning: digital literacy, creativity, communication, and problem-solving (Lo, 2024; Utaminingsih et al., 2023).

Media Limitations

Requires a stable internet network to open videos and digital LKPDs; Some students who are less familiar with technology need initial help; The use of personal devices is a challenge in schools with limited facilities (Rahmawati et al., 2025).

Conformity with Learning Design Theory

Media of this flipbook: In accordance with ADDIE principles in the analysis–design–development–evaluation stages; In line with the multimedia theory of (Aoonlamai & Kwangmuang, 2025; Mensah, 2015), because it combines visual and audio; Supporting the theory of constructivism through student independent activities; Relevant to social-cognitive theory through interactive videos as a learning model.

Relevance to 21st Century Learning and Digital Literacy Flipbook

Improving the digital literacy of elementary students; Help students learn independently (self-directed learning); Encourage critical thinking skills through LKPD; Supporting flexible learning according to the Independent Curriculum. Overall, this media is effective, relevant, and innovative for social studies learning in grade V of elementary school (Ismawati et al., 2023).

Conclusion

The main lesson from the process of designing e-learning-based IPAS learning tools is that systematically designed digital media can improve the quality of learning. Therefore, the designed e-learning-based flipbook learning tools support integrated and holistic IPAS learning by combining social and geographical content in elementary schools. This process shows that e-learning, when designed with a clear structure, attractive visual display, and interactive features that meet students' needs, is capable of creating a more effective, flexible, and motivating learning experience. In addition, e-learning design requires an in-depth understanding of the learning objectives, characteristics of IPAS materials, as well as how students learn through digital technology. From this design process, it can be seen that e-learning can help students understand abstract concepts such as the geographical location of Indonesia more easily through images, digital maps, videos, and visual LKPD in flipbooks. The application of e-learning also shows that digital learning is in line with the demands of the Independent Curriculum and 21st

century competencies, such as digital literacy, learning independence, and critical thinking skills. Teachers are advised to utilize interactive flipbooks combined with discussion methods and technical assistance to increase student engagement with visual materials. Future media development should focus on adding interactive features, offline access, and enriching the digital question bank. Meanwhile, further research is expected to quantitatively test the effectiveness of this tool, expand the scope of trials in various school contexts, and compare its performance with other types of e-learning media.

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Conflicts of Interest
The authors declare no conflict of interest.

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