

Development of Digital Comic Learning Media Using Heyzine-Flipbook

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Abstract

This study aims to determine the validity of a Heyzine Flipbook-based digital comic as an innovative learning medium for Civic Education, specifically designed to promote cooperation values among fifth-grade students at SDN Jatirahayu VIII. The research utilized a Research and Development (R&D) approach based on the ADDIE model, encompassing five stages: Analysis, Design, Development, Implementation, and Evaluation. The developed learning medium underwent a rigorous validation process conducted by three expert panels: material experts, language experts, and media experts. Data collection employed validation sheets constructed on a Likert scale, measuring five key indicators: content feasibility, language accuracy, ease of use, completeness of learning resources, and visual presentation quality. The validation results demonstrated that the Heyzine Flipbook-based digital comic achieved the "Highly Feasible" category across all dimensions, with validation scores of 94.32% from media experts, 97.5% from material experts, and 82.5% from language experts. Following expert recommendations, several revisions were implemented, including incorporating comprehensive usage instructions, enlarging visual elements for enhanced readability, integrating diverse examples of cooperation from various Indonesian regions, expanding evaluation questions from 12 to 20 items, adjusting font type and size for optimal legibility, and refining grammatical structures and spelling accuracy. The findings conclusively indicate that the developed learning medium possesses excellent quality characteristics and is pedagogically sound for implementation as an innovative, interactive, and technology-integrated learning resource in Civic Education instruction.

Keywords: Civic Education, cooperation values, digital comic, Heyzine Flipbook, learning media.

1 INTRODUCTION

Education serves as a fundamental pillar in cultivating future generations capable of advancing national development. In Indonesia, concerns regarding the quality of education among younger generations persist as a critical issue demanding immediate and comprehensive solutions. The urgency of this matter is underscored by Indonesia's performance in the 2022 Programme for International Student Assessment (PISA), where the nation ranked 69th out of 80 participating countries across three core competency domains: reading literacy, mathematics, and science. These results reflect significant deficiencies in Indonesian students'

mastery of foundational competencies, thereby emphasizing the imperative need for innovative pedagogical approaches—particularly in the strategic utilization of learning media that align with contemporary students' characteristics and learning preferences.

Contemporary students' learning needs are substantially shaped by the rapid proliferation of information and communication technology (Fisi Dwi Yunika, 2023). Learning media, functioning as instrumental tools that facilitate and enhance the teaching-learning process, play a pivotal role in achieving educational objectives with both effectiveness and efficiency (Fahmi et al., 2021). However, the application of conventional learning media—characterized by static presentations and unidirectional information flow—is increasingly inadequate in meeting the demands of today's digitally native learners who demonstrate greater familiarity with and responsiveness to technological innovations (Rizal, 2023). The continuous advancement of science and technology has catalyzed the emergence of diverse forms of learning media that are more creative, innovative, and interactive, while simultaneously expanding access to educational information and resources with greater flexibility and adaptability (Rahayu et al., 2023).

Preliminary observations conducted through interviews with Civic Education teachers at SDN Jatirahayu VIII revealed that fifth-grade instruction currently employs various media, including printed images, internet-sourced videos, and textbooks as primary learning resources. Although these conventional media have been regularly implemented in classroom instruction, their utilization remains suboptimal in terms of engagement and learning effectiveness. Consequently, this study developed a digital comic-based learning medium utilizing the Heyzine Flipbook platform as an innovative pedagogical alternative for Civic Education instruction.

Digital comics represent a contemporary evolution of traditional comics, created entirely through technological applications and accessible via digital devices. These comics function as effective learning media due to their capacity to convey educational content through compelling visual narratives (Tamara, 2019). Heyzine Flipbook, specifically, is a web-based application platform capable of presenting multimedia-enriched materials by seamlessly integrating images, text, audio, video, and interactive animations without requiring additional software installations (Humairoh, 2022). The platform's browser-based accessibility (Hadiyanti, 2021) renders it a practical and adaptive medium particularly suited for contemporary digital learning environments (Erawati et al., 2022).

Based on the aforementioned rationale, this research addresses the following research question: "What is the validity level of Heyzine Flipbook-based digital comic learning media development for Civic Education instruction?" This study aims to comprehensively describe the validity of digital comic learning media developed using the Heyzine Flipbook platform for Civic Education, specifically focusing on cooperation (*gotong royong*) values among fifth-grade elementary students. The research is expected to contribute as an innovative reference for educators in selecting appropriate learning media and to facilitate students' deeper comprehension of instructional content. Furthermore, this study aspires to inspire subsequent research endeavors in developing technology-integrated learning media that remain responsive to ongoing technological and informational advancements.

2 RESEARCH METHODS

2.1 Research Design

This study employs a Research and Development (R&D) approach, which aims to systematically develop and validate an educational product to enhance learning effectiveness. According to Atmazaki et al. (2023), Research and Development constitutes a research methodology designed to create or refine products, ensuring their effectiveness and alignment with users' educational needs. The development framework utilized in this research is the ADDIE model, an acronym representing five sequential stages: Analysis, Design, Development, Implementation, and Evaluation. This model is widely recognized for its systematic and iterative approach to instructional media development, providing a comprehensive framework that ensures both pedagogical soundness and practical applicability (Branch, 2009).

The five stages of the ADDIE model are operationalized as follows:

- a. Analysis: Identifying learning needs, learner characteristics, curriculum requirements, and existing media limitations
- b. Design: Planning the structure, content flow, visual elements, and interactive features of the digital comic
- c. Development: Creating the actual product, including content writing, illustration design, and platform integration using Heyzine Flipbook
- d. Implementation: Deploying the developed media in actual classroom settings
- e. Evaluation: Assessing the effectiveness and impact of the learning media on student outcomes

2.2 Research Scope and Limitations

Given the extensive nature of a complete R&D cycle, this research article focuses specifically on the validation stage, which constitutes a critical component of the Development phase in the ADDIE model. This deliberate limitation allows for an in-depth examination of the quality and feasibility of the developed learning media prior to classroom implementation. The validation process serves as a quality assurance mechanism, ensuring that the digital comic meets established academic, linguistic, and technical standards before being introduced to the target student population.

2.3 Validation Process

The developed Heyzine Flipbook-based digital comic learning media underwent a rigorous validation process conducted by three expert panels, each assessing distinct dimensions of the product:

- a. Material Expert: Evaluates content accuracy, curriculum alignment, pedagogical appropriateness, and the adequacy of cooperation value representation
- b. Language Expert: Assesses linguistic accuracy, grammatical correctness, vocabulary appropriateness for fifth-grade students, and clarity of instructional language
- c. Media Expert: Examines technical quality, visual design, user interface, navigability, multimedia integration, and overall aesthetic presentation

Each validator possesses relevant academic qualifications and professional experience in their respective domains, ensuring credible and authoritative assessment of the learning media.

2.4 Data Collection Instrument

Data collection was conducted using structured validation sheets designed according to a five-point Likert scale. The validation instrument encompassed five primary assessment indicators: (1) Content feasibility and accuracy; (2) Language appropriateness and clarity; (3) Ease of use and user-friendliness; (4) Completeness and relevance of learning resources; and (5) Visual presentation quality and aesthetic appeal

Each indicator comprised multiple assessment items with response options ranging from 1 (strongly disagree/very poor) to 5 (strongly agree/excellent). Validators provided numerical ratings alongside qualitative feedback and revision recommendations for each assessed component.

2.5 Data Analysis

The collected validation data underwent quantitative descriptive analysis through the following systematic procedure:

- 1. Score Tabulation:** All validator ratings were compiled and organized according to assessment categories
- 2. Percentage Conversion:** Raw scores were transformed into percentage

$$\text{Validation Percentage} = (\text{Total Score Obtained} / \text{Maximum Possible Score}) \times 100\%$$
- 3. Category Determination:** The calculated percentages were subsequently compared against predetermined validity criteria to establish the feasibility level of the developed media

The validity classification employed in this study is based on established assessment standards as presented in Table 1.

Table 1. Expert Validation Criteria

Percentage Range (%)	Validity Category	Description
80% – 100%	Highly Feasible	Product demonstrates excellent quality and is ready for implementation with minimal or no revisions
60% – 79%	Feasible	Product shows good quality and is suitable for use with minor revisions
40% – 59%	Fairly Feasible	Product requires substantial revisions before implementation
0% – 39%	Less Feasible	Product needs major reconstruction and comprehensive redesign

Source: Adapted from Ridwan in Wuwungan et al. (2023)

2.6 Revision Process

Following the validation assessment, all expert recommendations and suggestions were systematically documented and analyzed. Identified weaknesses and areas requiring improvement were addressed through iterative revisions until the learning media achieved optimal quality standards. This revision process ensured that the final product incorporated expert insights while maintaining coherence with the original instructional objectives and pedagogical framework.

3 RESULT AND DISCUSSION

This Research and Development study produced an innovative educational product: a Heyzine Flipbook-based digital comic designed specifically for Civic Education (Pancasila Education) instruction, focusing on cooperation (*gotong royong*) values among fifth-grade students at SDN Jatirahayu VIII during the even semester of the 2024/2025 academic year. The product development process followed a systematic approach encompassing multiple stages, with expert validation serving as a critical quality assurance mechanism. This validation process constituted a comprehensive assessment of the developed media across multiple dimensions, including content accuracy and alignment, visual presentation quality, linguistic appropriateness, and user-friendliness, thereby ensuring the media's effectiveness and suitability for implementation in actual classroom learning contexts.

3.1 Media Product Validation

The media product validation phase represented a rigorous examination of the developed learning media through expert assessment from three specialized domains: media technology, subject matter content, and linguistic quality. As emphasized by Armanda et al. (2023), this validation process serves the essential function of determining the pedagogical feasibility of developed learning media and confirming whether the product has been constructed in accordance with predetermined educational objectives and design specifications. The validation employed structured assessment questionnaires utilizing a five-point Likert scale, with evaluation criteria specifically tailored to align with the respective areas of expertise represented by each validator panel. The validation methodology involved systematically distributing comprehensive questionnaires and providing access to the complete media product to expert validators, facilitating thorough examination and critical evaluation. The collected expert input subsequently informed an iterative revision process aimed at refining and optimizing the learning media's quality and effectiveness.

3.1.1 Media Expert Validation Data

The media validation process was conducted by two distinguished media technology experts: Mrs. Devita Cahyani Nugraheny, M.Pd., and Mrs. Evi Faujiah,

M.Pd. The validation proceeded through two sequential stages to ensure comprehensive quality assessment and iterative improvement. The first-stage validation results are systematically presented in Table 2.

Table 2. Results of Media Expert Validation Stage I

Aspect	Score		Total Score	(%)	Criteria
	V1	V2			
Visual Presentation	13	18	31	77.5%	Feasible
Ease of Use	7	8	15	93.75%	Highly Feasible
Completeness of Learning Resources	13	14	27	84.38%	Highly Feasible
Overall Average				82.95%	Highly Feasible

Based on the results presented in Table 2, the first-stage media expert validation yielded an overall average percentage of 82.95%, placing the product in the "Highly Feasible" category. However, validators identified several areas requiring refinement and enhancement. Expert recommendations included incorporating comprehensive operational instructions for both the media interface and the evaluation quiz component, adding semester and class information to the quiz section, reducing background music volume during video-based questions to prevent audio interference, implementing clearer and more legible font selections, and utilizing more varied and vibrant color schemes to enhance visual appeal and student engagement. Following systematic implementation of these improvements, a second validation stage was conducted to verify the effectiveness of the revisions. The second-stage validation results are presented in Table 3.

Table 3. Results of Media Expert Validation Stage II

Aspect	Score		Total Score	(%)	Criteria
	V1	V2			
Visual Presentation	19	20	39	97.5%	Highly Feasible
Ease of Use	7	6	13	81.25%	Feasible
Completeness of Learning Resources	15	16	31	96.88%	Highly Feasible

Overall Average			94.32%	Highly Feasible
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Table 3 demonstrates that the second-stage media expert validation achieved an overall average percentage of 94.32%, maintaining the "Highly Feasible" classification while indicating substantial improvement in media quality following the implementation of expert recommendations from the first validation stage. This notable increase from 82.95% to 94.32% represents an 11.37 percentage point improvement, validating the effectiveness of the iterative revision process and confirming that the Heyzine Flipbook-based digital comic meets rigorous technical and design standards for educational media.

3.1.2 Material Expert Validation Data

The content validation process was conducted by two subject matter experts with extensive expertise in Civic Education pedagogy: Mr. Risky Dwiprabowo, M.Pd., and Mrs. Rosalinda Yuanita Panjaitan, S.Pd.SD. Similar to the media validation, the material assessment proceeded through two comprehensive stages to ensure thorough evaluation and systematic refinement of content quality. The first-stage material validation results are presented in Table 4.

Table 4. Results of Material Expert Validation Stage I

Aspect	Score		Total Score	(%)	Criteria
	V1	V2			
Content Suitability	4	4	8	100%	Highly Suitable
Presentation	20	24	44	78.57%	Feasible
Language	6	6	12	75%	Feasible
Overall Average				80%	Highly Feasible

Based on the results presented in Table 4, the first-stage material expert validation achieved an overall percentage of 80%, categorized as "Highly Feasible." However, expert reviewers identified opportunities for enhancement to optimize the educational value and comprehensiveness of the content. Primary recommendations included expanding the scope of content coverage to provide more thorough treatment of cooperation concepts and their practical applications, and significantly increasing the number of evaluation questions to enable more comprehensive assessment of student understanding and learning outcomes. Upon implementation of these content improvements, a second validation stage was conducted, with results presented in Table 5.

Table 5. Results of Material Expert Validation Stage II

Aspect	Score		Total Score	(%)	Criteria
	V1	V2			
Content Suitability	4	4	8	100%	Highly Suitable
Presentation	27	27	54	96.43%	Highly Feasible
Language	8	8	16	100%	Highly Suitable
Overall Average				97.5%	Highly Feasible

Table 5 reveals that the second-stage material expert validation achieved an exceptional overall average percentage of 97.5%, representing a substantial 17.5 percentage point improvement from the initial 80% rating. This remarkable increase validates the effectiveness of content enhancements and demonstrates that the digital comic successfully addresses curriculum requirements, pedagogical objectives, and age-appropriate learning needs. The consistently perfect scores (100%) in Content Suitability across both validation stages, combined with dramatic improvements in Presentation (from 78.57% to 96.43%) and Language (from 75% to 100%), confirm that the Heyzine Flipbook-based digital comic possesses superior content quality and instructional validity.

3.1.3 Language Expert Validation Data

The linguistic quality validation was conducted by two language education experts: Mrs. Maria Ulfa, M.Pd., and Mr. Ilmi Noor, S.Si. Unlike the media and material validations, the language assessment was completed in a single comprehensive stage, as the initial validation results demonstrated high quality with only minor technical refinements required. The language expert validation results are presented in Table 6.

Table 6. Language Expert Validation Results

Aspect	Score		Total Score	(%)	Criteria
	V1	V2			
Linguistic Appropriateness	15	15	30	75%	Feasible
Language Presentation	17	19	36	90%	Highly Feasible
Overall Average				82.5%	Highly Feasible

Based on the results presented in Table 6, the language expert validation achieved an overall average percentage of 82.5%, categorized as "Highly Feasible." The decision to conduct only a single validation stage was methodologically sound, as the initial assessment already demonstrated strong linguistic quality with identified issues limited to minor technical corrections in grammar, spelling, and punctuation that could be readily addressed without requiring comprehensive re-evaluation. The validators provided specific recommendations focused on correcting typographical errors, refining sentence structures for enhanced clarity, and ensuring consistent terminology usage throughout the digital comic. These targeted linguistic improvements were implemented promptly, resulting in a polished final product that effectively communicates cooperation values through age-appropriate, grammatically accurate, and pedagogically sound language.

3.2 Media Product Revision

Based on comprehensive validation feedback from media, material, and language experts, systematic revisions were implemented to enhance the Heyzine Flipbook-based digital comic across multiple dimensions. The revision process addressed technical, content, and aesthetic aspects identified through expert assessment. Major improvements included: (1) incorporating comprehensive usage instructions for both media navigation and evaluation games to facilitate independent student operation; (2) enlarging visual elements including background graphics, character illustrations, and typography to enhance readability and visual impact; (3) expanding content coverage to include diverse examples of cooperation (*gotong royong*) practices from various Indonesian regions, thereby enriching cultural representation and broadening students' understanding of this national value's manifestation across different contexts; (4) substantially increasing the evaluation component from 12 to 20 assessment items to enable more comprehensive measurement of student learning outcomes; (5) optimizing font selection by replacing the original Rabbits Bro font (size 27) with Sensei font (size 33) to improve legibility and visual professionalism; and (6) correcting grammatical errors, spelling mistakes, and refining the definitional clarity of cooperation concepts. These comprehensive revisions, informed by expert insights and validated through iterative assessment, demonstrably enhanced the media's overall quality, pedagogical effectiveness, and professional presentation standards.

Based on comprehensive validation data obtained throughout this Research and Development study, the Heyzine Flipbook-based digital comic focusing on Civic Education content and cooperation (*gotong royong*) values has been conclusively determined to possess high validity and pedagogical feasibility for implementation as an innovative learning medium in elementary education contexts. The systematic validation process, conducted by expert panels across three critical assessment domains, yielded consistently positive results that exceeded the established feasibility thresholds.

The second-stage media expert validation demonstrated exceptional quality, achieving an impressive average percentage of 94.32% within the "Highly Feasible" category. This substantial score reflects the media's superior technical

execution, user interface design, multimedia integration, and overall aesthetic presentation. Similarly, the second-stage material expert validation attained a remarkable 97.5% rating, also classified as "Highly Feasible," confirming the accuracy, completeness, and pedagogical appropriateness of the content, as well as its effective alignment with the fifth-grade Civic Education curriculum requirements and learning objectives. The language expert validation, conducted in a single comprehensive stage, yielded an 82.5% average score categorized as "Highly Feasible," validating the linguistic accuracy, grammatical correctness, vocabulary appropriateness for the target age group, and overall clarity of instructional language employed throughout the digital comic.

The progressive increase in validation scores across assessment stages provides compelling evidence that the iterative revision process successfully addressed initial weaknesses and deficiencies identified in the preliminary product version. This systematic refinement demonstrably enhanced the overall quality, effectiveness, and pedagogical soundness of the learning media. The comprehensive improvements implemented—encompassing technical enhancements, content enrichment, visual design optimization, and linguistic refinements—collectively ensured that the final product meets rigorous standards for content feasibility, language appropriateness, and visual presentation quality.

Consequently, the developed Heyzine Flipbook-based digital comic is deemed pedagogically sound and practically viable for implementation as an interactive, technology-integrated learning resource in Civic Education instruction. The media's demonstrated capacity to effectively present cooperation values through engaging visual narratives, combined with its accessibility via digital platforms, positions it as a valuable educational innovation that addresses contemporary students' learning preferences while maintaining curriculum fidelity and instructional rigor.

3 CONCLUSION

This research contributes to the growing body of evidence supporting digital media integration in elementary education, particularly for character education and civic values instruction. The successful development and validation of this Heyzine Flipbook-based digital comic demonstrate the viability of combining traditional comic storytelling with modern digital technologies to create engaging, effective learning experiences. Educators are encouraged to explore similar technology-enhanced approaches to curriculum delivery, particularly for abstract concepts such as civic values that benefit from visual representation and narrative context. Future research should extend beyond validation to examine the media's actual impact on student learning outcomes, attitude formation, and behavioral manifestation of cooperation values in authentic classroom and community settings. Additionally, subsequent studies might investigate the scalability of this approach across different grade levels, subject areas, and educational contexts, as well as explore the integration of additional interactive features such as gamification elements, adaptive learning pathways, or collaborative digital environments. Such investigations would further strengthen the empirical foundation for digital comic integration in contemporary elementary education practice.

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