Journal of Integrated Elementary Education
ISSN 2776-1657 (online) 2828-223X (printed)
Volume 5, Number 2, April-September 2025, Page 588-605
Website: https://journal.walisongo.ac.id/index.php/jieed

Development of a Basic Literacy-Based Flipbook to Improve Reading Comprehension of Narrative Texts in Higher Grades

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DOI:
https://doi.org/10.21580/jieed.v5i2.26070

Keywords:
literacy crisis; flipbook; basic literacy; reading comprehension; narrative text

Publisher:
Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Walisongo Semarang, in collaboration with the Association of Madrasah Ibtidaiyah Teacher Education Lecturers, Indonesia

Received: 8 April 2025,
Revised: 3 July 2025,
Accepted: 20 July 2025,
Published: 21 Sept 2025

Abstract

This study addresses the critical challenge of low reading comprehension among elementary school students by developing and evaluating a Basic Literacy-Based Flipbook. Employing a Research and Development (R&D) methodology based on the modified Borg and Gall model, the study aimed to design, validate, and test the effectiveness of a basic literacy-based flipbook integrating local Semarang culture. The research was conducted in two phases: a small-scale test with six students at Pakintelan 01 Public Elementary School and a large-scale test with 28 students at Bringin 1 Public Elementary School, Semarang. The flipbook was designed based on the results of the analysis of potential and identifying problems, and was validated by expert validators. The media expert rated the product with an initial feasibility score of 84.72%, which increased to 91.66% after revision, while the material expert gave it a 90% score, confirming the product's very feasible criteria. In the effectiveness test, the small-scale group's average pre-test score of 56 increased to 82 in the post-test, and the large-scale group's pre-test average of 57.6 rose to 83.5. N-gain scores of 62.3% for the small scale and 61% for the large scale indicate that the media is "quite effective". These findings suggest that the Basic Literacy-Based Flipbook is not only a highly feasible and effective tool for improving reading comprehension but also a promising medium for fostering broader literacy, critical thinking, and collaborative skills in elementary education.

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INTRODUCTION

The rapid advancement of technology in the 21st century has fundamentally transformed educational environments, making the integration of digital media a critical component in fostering essential literacy skills, such as reading comprehension, critical thinking, and digital fluency (Rahmah Agustiani et al., 2025). Research consistently demonstrates that digital media, when thoughtfully integrated into curricula, enhance student engagement, support foundational literacy development, and prepare learners for the demands of a digitally connected world (Audrin & Audrin, 2022). Approaches that blend traditional and digital resources, emphasize teacher training, and address equity and access are particularly effective in promoting basic literacy and digital skills across diverse populations (Devi & Rusdinal, 2023).

Despite the widely acknowledged importance of literacy, a significant challenge persists within many educational systems, particularly in Indonesia, where a pervasive "literacy crisis" or "reading emergency" has been documented (Isdaryanti et al., 2020; Stit et al., 2021). A substantial number of students, especially at the elementary level, continue to struggle with foundational reading fluency and comprehension skills (Canuto et al., 2024; Reflianto, 2021). This issue is often exacerbated by a lack of student interest in reading and the use of traditional teaching methods that may not fully cater to students' learning needs (Käsper et al., 2018, 2020). A pre-research cognitive assessment conducted at the Public Elementary School of Bringin 1, Semarang, revealed a concerning average score of only 50.5 in narrative text comprehension, falling well below the predetermined minimum learning objective of 70. This alarming data underscores a critical gap between educational ideals and the reality of student learning outcomes, highlighting the urgent need for effective and engaging interventions to address this deficit in teacher education.

The existing literature offers various solutions to the literacy problem, exploring the use of digital media and specific pedagogical models. Suyuti et al. (2023) highlighted the general effectiveness of technology in improving learning outcomes, while studies by Batubara (2021) and Purwati (2021) specifically emphasize the potential of interactive and digital media, such as flipbooks, to enhance student engagement and learning. The Cooperative Integrated Reading and Composition (CIRC) model has also been shown to be effective in improving reading comprehension and critical thinking through structured collaborative activities (Piliandini, 2022). Although digital media and systematic literacy programs have been implemented in Indonesia, no research has directly addressed the combined effect of a digital flipbook specifically designed with a systematic basic literacy framework in the Indonesian context (Alwi et al., 2024; Najichah, 2024). This represents a clear gap and an opportunity for creating and evaluating a flipbook tailored to integrate the three distinct steps of basic literacy, habitual,

developmental, and learning, with locally relevant cultural content, an approach not previously documented or tested in this specific manner.

This study integrated the TPACK framework, Piaget's theory of cognitive development, and a structured basic literacy progression to provide a robust foundation for designing effective flipbooks for elementary students. The Technological Pedagogical and Content Knowledge (TPACK) framework emphasizes that effective technology integration in education requires a deep, synergistic understanding of technology, pedagogy, and content. Recent research in Indonesia has demonstrated that media designed using the TPACK approach can significantly enhance students' basic literacy skills by ensuring that technology use is pedagogically sound and content-driven (Aldalalah et al., 2025; Ammade et al., 2020). In addition, Piaget's theory identifies fourth-grade students as being in the concrete operational stage, where learning is most effective when supported by concrete objects and visual aids. This supports the use of visually rich, interactive media such as flipbooks, which can help students process and internalize abstract literacy concepts through tangible and engaging experiences (Aldalalah et al., 2025; Pakpahan & Saragih, 2022). Finally, a systematic approach to basic literacy, such as habitual, developmental, and learning literacy steps, provides a clear trajectory for skill acquisition. Research shows that when digital media is structured around these progressive steps, it can more effectively scaffold student learning and foster literacy development (Damariswara & Aka, 2024).

The urgency of this research is driven by the persistent global literacy crisis and the critical need for innovative and effective teaching tools. This study directly addresses this pressing issue by developing and testing a novel basic-literacy-based flipbook. Theoretically, this research provides a new, integrated model for combining a digital medium with a specific literacy framework and a pedagogical approach rooted in the TPACK framework, thereby expanding the understanding of how technology can be purposefully aligned with fundamental learning goals (Drajati et al., 2018; Lisenbee & Ford, 2018). Practically, this study contributes a validated, effective, and replicable learning tool that teachers can use to directly improve students' reading comprehension, critical thinking, and collaborative skills (Niswah & Dewi, 2024; Suriani et al., 2024). This dual contribution is particularly significant, as it provides a viable pathway to improve the quality of basic education and equip students with essential competencies for the 21st century.

In light of these challenges and theoretical considerations, the objectives of this study are as follows: (1) describe the design and development of the Basic Literacy-Based Flipbook media; (2) evaluate the feasibility of the developed media through validation by expert reviewers; and (3) determine the effectiveness of the media in improving reading comprehension skills among elementary school students.

METHODS

This study used a modified version of the Borg and Gall development model, as adapted by Sugiyono (2019), which consists of eight key stages, owing to time and resource constraints. The stages were as follows: (1) exploring potential and identifying problems; (2) collecting pre-research data; (3) designing the flipbook media; (4) validating the media with experts; (5) revising the media; (6) conducting a small-scale effectiveness test; (7) conducting a second revision based on feedback; and (8) performing a large-scale effectiveness test.

The research was conducted at two elementary schools in Semarang during the 2024/2025 academic year. The small-scale test involved six students from Grade IV at Pakintelan 01 Public Elementary School, selected using a purposive sampling technique to ensure a mix of high-, average-, and low-performing students. The large-scale test involved 28 Grade IV students at Bringin 1 Public Elementary School, where a saturated sampling technique was used, including the entire class population as the sample. All ethical considerations, including informed consent and data confidentiality, were followed throughout the research process.

Data were collected using four non-test techniques: interviews, observations, questionnaires, and focus group discussions. Interviews were conducted with Grade IV teachers to identify problems in learning the Indonesian language. Observations were used to explore the learning processes, school infrastructure, and existing media. Questionnaires were used for needs analysis with both teachers and students and for product validation with media and material experts.

The feasibility of the flipbook was analyzed using a descriptive test formula to calculate percentage values, with criteria ranging from "very feasible" to "not feasible." The effectiveness of the media was evaluated using the N-Gain test formula to measure the increase in student learning outcomes from pre-test to post-test scores. The N-Gain values were then interpreted based on established criteria to determine if the media was "ineffective," "less effective," "quite effective," or "effective".

RESULTS

1. Exploring Potential and Identifying Problems

Researchers explore potential and identify problems by conducting pre-research activities such as interviews. The researchers conducted interviews with the Grade IV teachers of Bringin 1 Elementary School in Semarang. The interview instrument focused on identifying problems in the planning, implementation, and assessment of Indonesian language learning in primary schools. Based on the results of the interview, the researchers found problems such as the teacher's reading method, which had not been implemented effectively in solving students' reading difficulties, as well as the use of learning models and media that were not in

accordance with the abilities and needs of each student. This caused the learning objectives achieved to be both uneven and insignificant. Therefore, researchers have designed learning experiences that are expected to solve these problems.

2. Collecting Pre-Research Data

The pre-research data obtained by the researcher included interview results, student and teacher needs questionnaires, school observations, and results of cognitive assessments of students' reading comprehension of narrative texts. Based on the data collected, the researcher found that students still lacked reading comprehension skills, especially in narrative text material. This study aims to design a Flipbook Media Based on Basic Literacy, use learning models that can improve students' literacy skills, and use Minimum Class Competency Assessments to measure students' learning outcomes. The researcher conducted learning planning by considering the needs of the students and the facilities available at the school.

3. Designing Flipbook Media

Based on the results of the data analysis, the researchers used flipbook media to overcome the problem of a lack of reading comprehension skills. In addition, researchers have used basic literacy theory to improve students' reading skills. Researchers used local wisdom from Semarang City to design media themes. This aimed to make students closer to and more familiar with the culture of the area in which they live. Researchers used the Canva application to design the flipbook media. Subsequently, the researchers converted the media design results on the heyzine.com website so that students could access them in the media effectiveness test. Figure 1-4 show the flipbook media design developed by the researchers.



Cover



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Instructions for Use



Foreword

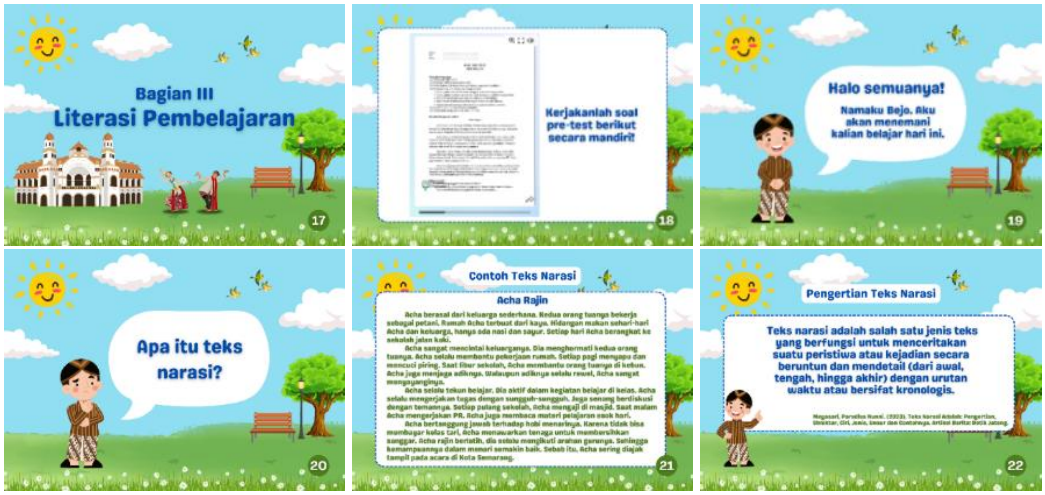
Figure 2. Pre-Content of Flipbook Media Based on Basic Literacy



Part I: Habitual Literacy



Part II: Development Literacy





Part III Learning Literacy

Part IV: Cognitive Assessment

Figure 3. Contents of Flipbook Media Based on Basic Literacy



Glossary Bibliography About the Author

Figure 4. Post-content of Flipbook Media Based on Basic Literacy

As shown in Figure 1-4, media design begins with a pre-content that includes a media cover, table of contents, instructions for using the media, and a foreword from the media developer. The content of the design researcher's media uses basic literacy theory, which consists of habitual, developmental, learning, and cognitive assessment literacies. Finally, the post-media content consisted of a glossary, bibliography, and information about the author.

4. Validating Media and Materials in Flipbooks

Researchers conducted two media feasibility tests, including media feasibility assessments by media, material, or content experts. The following are the results of the flipbook media feasibility test by expert validators.

Table 3. Results of the Feasibility Test of Flipbook Media Based on Basic Literacy

Validator	Aspect	Score	Criteria
Media Expert	Curriculum suitability	2/4	**Very Feasible**
	Educational	9/12	
	Design	7/8	
	Linguistic	10/12	
	Presentment techniques	23/24	
	Practicality or ease of media	10/12	
Total		**61/72**	
Percentage		**84.7%**	
Material Expert	Curriculum suitability	4/4	**Very Feasible**
	Material suitability	32/36	
	Learning	8/8	
	Language feasibility	10/12	
	Total	**54/60**	
	Percentage	**90%**	

Based on the assessment of product feasibility in terms of media, the results obtained showed that Flipbook Media Based on Basic Literacy is very feasible to be tested on samples or students, with a value of 84.72%. The media expert validator suggested completing the learning achievements and objectives in the media. In addition, it would be better if the media were equipped with activity instructions to help users. This allows students to understand the activities they will carry out through the Flipbook Media Based on Basic Literacy. The media expert validator also provided suggestions for improving the writing of the subtitles and their sequence.

The results of the product feasibility assessment in terms of material showed that the Flipbook Media Based on Basic Literacy was very feasible to be tested on samples or students, with a value of 90%. The suggestions for improvement from the material expert validator were to simplify the paragraphs in the media and use simpler words and sentences. Therefore, the researcher plans to improve the media that was developed.

5. Revising Flipbook Media

The researcher considered suggestions for improvement by media and material experts and made revisions to improve the media developed, which would

be even better. In addition, the researcher added activity instructions to provide information about the activities that will be carried out in learning in each part or stage of learning using the flipbook media.

Before Revision	After Revision
	
	

Figure 5. Flipbook Media Based on Basic Literacy After Revision

The product specifications developed by the researcher after the revision included media pre-content, media content, and media post-content. The media pre-content consisted of the media cover, preface, table of contents, usage instructions, activity instructions, and excerpts of Learning Achievements and learning objectives. The media content remains the same, using basic literacy theory, which consists of habitual, developmental, and learning literacy and cognitive assessment. The post-media content consisted of a glossary, bibliography, and developer profile.

After the revision, the researcher reassessed the feasibility of the flipbook media with a media expert. The following are the results of the media feasibility test assessment after the revisions.

Table 5. Media Feasibility Test Results After Revision

Validator	Aspect	Score	Criteria
Media Expert	Curriculum suitability	3/4	**Very Feasible**
	Educational	11/12	
	Design	8/8	
	Linguistic	11/12	
	Presentment techniques	23/24	
	Practicality or ease of media	10/12	
	Total	**66/72**	
	Percentage	**91.7%**	

Based on the product feasibility test after revision, in terms of media, the results obtained were that the Flipbook Media Based on Basic Literacy was very feasible to be tested on samples or students, with a final score of 91.7%.

6. Testing Media Effectiveness on A Small Scale

A small-scale effectiveness test of the media was conducted in grade IV at Pakintelan 01 Elementary School. Learning was conducted for three lesson hours each week. It began with pre-learning activities for students who were not yet fluent in reading, followed by learning activities that began with working on pre-test questions and ended with post-test questions. The learning model used by the researcher was CIRC.

Table 6. Learning Outcomes of Small-Scale

Action	Average	Lowest Value	Highest Value	Average Difference
Pretest	56	48	75	26
Posttest	82	75	95	

The learning outcomes of students on a small-scale pre-test assessment obtained an average score of 56. In the post-test, the average score was 82. Thus, a difference in the average score of 26 was found before and after using the Flipbook Media Based on Basic Literacy.

7. Revising Flipbook Media

After conducting a small-scale media effectiveness test, the researcher administered a media response questionnaire to teachers and students of grade IV at Pakintelan 01 Public Elementary School. The grade IV teacher also suggested that the media title on the cover be changed in color to make it more dominant than the subtitle. In addition, the subtitle Penggalan Capaian Pembelajaran (Learning Achievement Fragment) should be changed to Capaian Pembelajaran (Learning Achievement). Based on the questionnaire results and suggestions from the class teachers, the researcher revised the media as follows.

Before Revision	After Revision
	
	

Figure 6. Final Revision of Flipbook Media Based on Basic Literacy

8. Testing Media Effectiveness on A Large Scale

A large-scale media effectiveness test was conducted in Grade IV at Bringin 1 Elementary School. Learning was conducted for three lesson hours each week. It began with pre-learning activities for students who were not yet fluent in reading, then learning activities began by working on pre-test questions, and ended with working on post-test questions. The learning model used by the researcher was CIRC.

Table 7. Learning Outcomes of Large-Scale

Action	Average	Lowest Value	Highest Value	Average Difference
Pretest	57.6	40	75	25.9
Posttest	83.5	72	95	

The learning outcomes of students in a large-scale pre-test assessment obtained an average value of 57.6. In the post-test, an average value of 83.5 was achieved. Thus, a difference in the average value of 25.9 was found between before and after using Flipbook Media, based on Basic Literacy.

Researchers have conducted N-Gain tests on student learning outcomes on both small and large scales. The following are the results of the N-gain test on student learning outcomes.

Table 8. N-Gain Test Results

Effectiveness Test	Action	Average	Average Difference	N-gain	Percentage	Criteria
Small-Scale	Pretest	56	26	0.623	62.3%	**Quite Effective**
	Posttest	82				
Large-Scale	Pretest	57.6	25,9	0,61	61%	**Quite Effective**
	Posttest	83.5				

Based on Table 8, the researcher found data including the difference in the average value of learning outcomes and the N-Gain value before using the media and after using the media. In the small-scale media effectiveness test, the N-Gain value was 0.623 (62.3%). Therefore, the use of Flipbook Media Based on Basic Literacy on a small scale is categorized as quite effective in improving reading comprehension of narrative texts. On a large scale, the N-Gain value was 0.61 (61%). Therefore, on a large scale, the use of Flipbook Media Based on Basic Literacy is categorized as quite effective in improving the reading comprehension of narrative texts.

DISCUSSION

1. Interpretation of Findings

The findings of this study provide compelling evidence that basic literacy-based flipbook media is a highly effective and feasible tool for improving reading comprehension among elementary school students. The significant increase in

average test scores from the pre-test to the post-test, observed in both the small-scale (62.3% N-gain) and large-scale (61% N-gain) groups, unequivocally demonstrates the product's effectiveness. This outcome is consistent with the theoretical framework underpinning this study. The interactive and visually-rich design of the flipbook, for instance, aligns directly with Piaget's theory of cognitive development, which posits that fourth-grade students, operating in the concrete operational stage, learn best through tangible and stimulating visual aids (Feldman, 2004; Rochat, 2024). The engaging, multimedia format of the flipbook served as a concrete learning object that facilitated a deeper understanding of narrative texts, moving students beyond rote memorization to a more profound comprehension (Cerovac & Keane, 2025; Frazier & Bryant, 2019).

Furthermore, the successful development and implementation of the media is a testament to the principles of the Technological Pedagogical and Content Knowledge (TPACK) framework (Harris et al., 2009; Koehler et al., 2014). The flipbook was not merely a technological gimmick; it was a carefully designed product in which technology (the flipbook format), pedagogy (the basic literacy and CIRC models), and content knowledge (narrative texts with local wisdom) were meticulously integrated to create a coherent and effective learning experience. The high scores from both media (91.66%) and material (90%) expert validators affirmed this successful integration, confirming that the media is pedagogically sound and well-suited for its intended purpose.

The qualitative findings from the pre-research observations and post-test feedback further contextualized these results. The initial lack of engagement from students, noted by teachers, was directly addressed by the flipbook's interactive design and incorporation of familiar, local Semarang culture. This cultural relevance acted as a powerful motivator, increasing students' interest and leading to a more active and focused learning environment (Marhaeni et al., 2025; Priyakanth et al., 2021). The flipbook's ability to transform passive reading into an active, engaging process is a key factor in the observed improvement in comprehension scores.

The results of this study strongly align with the growing body of literature on the effectiveness of digital learning media. Our findings align with those of Purwati (2021), who demonstrated that interactive flipbooks significantly improved learning outcomes and student engagement. This research extends their findings by demonstrating the positive impact of a flipbook systematically structured around a basic literacy framework, providing a more granular and targeted approach to content design. This study also supports the conclusions of Piliandini (2022), who highlighted the effectiveness of the Cooperative Integrated Reading and Composition (CIRC) model. However, our research provides a novel contribution by demonstrating how the CIRC model can be seamlessly integrated with a digital medium to amplify its positive effects, a combination that has not been extensively explored in previous studies.

Conversely, our findings offer a concrete solution to the problem identified by studies such as Wahyuningsih et al. (2022) and Suparlan (2021), which have long pointed to a persistent "literacy crisis" in Indonesia. While these studies accurately diagnosed the problem of a decline in reading interest and comprehension, our research provides a practical and tested intervention. We move beyond simply identifying the issue to producing a validated, effective tool that teachers can use to directly combat the problem. Thus, this study not only confirms existing findings on the efficacy of digital media but also provides a tangible, evidence-based response to a well-documented educational crisis.

2. Practical Implications and Contribution

The findings of this study have significant practical implications for teachers, curriculum developers, and policymakers in elementary education. First, the Basic Literacy-Based Flipbook offers teachers a validated and highly effective digital resource that can be readily implemented in Indonesian-language lessons. It provides a structured three-step approach to literacy development, from initial habitual exposure to more complex developmental and learning stages, that can guide pedagogical practice. The success of this tool serves as a compelling argument for the wider adoption of well-designed digital media to address foundational skill deficits in the future.

Second, this study underscores the immense value of integrating local cultural knowledge into learning materials. The positive impact of Semarang-themed narrative texts on student engagement demonstrates that culturally relevant content can serve as a powerful catalyst for motivation and improved learning outcomes. This finding provides a replicable model for other educators to create learning media that is effective, resonant, and meaningful for their specific student populations.

Third, the research methodology provides a key contribution. By employing a systematic Research and Development (R&D) approach, this study produced a product that was rigorously tested and validated by both experts and end users. This process ensures the high quality, feasibility, and effectiveness of the flipbook, offering a model for future educational researchers to follow when designing and evaluating learning tools. This approach moves beyond theoretical discourse to provide a tangible, evidence-based solution that is immediately applicable in classrooms.

3. Limitations and Future Research

Despite its significant contributions, this study has some limitations. The use of a modified R&D model, with only eight of the ten original stages, constrained the scope of the research and prevented a more comprehensive and long-term evaluation of the media's effects. Additionally, the study was conducted with a limited sample size across two schools, which may limit the generalizability of the

findings to other schools with different demographic or socio-economic characteristics. Future research should address these limitations by conducting longitudinal studies to assess the long-term impact of flipbooks on students' reading habits and academic performance. It would also be beneficial to replicate this study with a larger and more diverse sample to confirm the generalizability of the findings across different regions. Furthermore, exploring the media's impact on students with varying levels of digital literacy and investigating its effectiveness in subjects beyond the Indonesian language would be a valuable area for further investigation.

CONCLUSION

This study successfully developed and evaluated a basic-literacy-based flipbook as an effective tool for improving the reading comprehension of narrative texts among elementary school students. This study indicates that a systematic Research and Development (R&D) process, informed by the TPACK framework, successfully produced a digital learning medium that is both technologically sound and pedagogically robust. The feasibility of this medium was conclusively confirmed by expert validators, who rated the product as "very feasible" (91.66% from the media expert and 90% from the material expert), attesting to its high quality and suitability for classroom use. Most significantly, the flipbook's effectiveness was empirically demonstrated through a rigorous pre- and post-test design, revealing a substantial and meaningful increase in students' reading comprehension scores. This improvement is clearly reflected in the "quite effective" N-gain values for both the small-scale (62.3%) and large-scale (61%) test groups, indicating that media is a powerful tool for fostering academic growth.

The primary contributions of this study are twofold. Theoretically, it offers a new, integrated model for addressing the persistent literacy crisis by combining a digital medium with a specific, systematic literacy framework and relevant pedagogical approach, a combination not widely explored in the existing literature. This integration provides a nuanced understanding of how technology can be purposefully designed to enhance foundational skills in early childhood education. Practically, this study provides a validated, ready-to-use, and culturally relevant learning tool that can be directly implemented by educators. This serves as a tangible solution to a critical educational problem, demonstrating that leveraging appropriate and well-designed media can transform passive learning into an interactive and meaningful experience. The findings of this study underscore the critical importance of developing learning tools that are not only effective but also resonate with the specific needs and cultural contexts of the learners they aim to serve. Thus, this study serves as a strong model for future research and development of educational media.

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