



## Development of Interactive Multimedia Narrative Text (Medtenar) and Its Effectiveness in Enhancing Elementary Students' Reading Comprehension

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**Abstract:** This study aims to describe the development of an interactive multimedia narrative text (Medtenar) for teaching narrative text reading comprehension to fourth-grade elementary students and to evaluate its feasibility and effectiveness. The research employed a Research and Development (R&D) method using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). Participants included seven fourth-grade students in a one-on-one pilot test at SDN Podorejo 01 and 25 fourth-grade students in a field test at SDN Bringin 01. Data were collected through expert validation sheets for media and material/language content, student and teacher response questionnaires, and reading comprehension tests administered as pretests and posttests. Data analysis included: (1) feasibility assessment using Aiken's V to determine expert validity, (2) practicality assessment through descriptive percentage scores from student and teacher questionnaires, and (3) effectiveness assessment using the Shapiro–Wilk normality test, paired-samples t-tests for pretest–posttest differences, and normalized gain (N-gain) to measure learning improvement. Validation results indicated that Medtenar is highly feasible, with Aiken's V values of 0.977 (media experts) and 0.952 (material and language experts). Effectiveness testing showed improvements in reading comprehension, with N-gain scores of 0.6164 (pilot test) and 0.5997 (field test), both categorized as moderate. These findings suggest that Medtenar is a feasible and moderately effective learning medium for enhancing narrative text reading comprehension and is recommended to support Grade 4 learning under the Merdeka Curriculum and deep learning framework.

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## Introduction

The Merdeka Curriculum was introduced as part of an educational transformation to create a comfortable, enjoyable learning environment. This curriculum not only emphasizes essential material but also strengthens students' character development and competencies (Lestari et al., 2023). Its main orientation is to provide flexibility in the learning process and strengthen creative and innovative thinking skills (Sulistyani & Mulyono, 2022). In its implementation, the deep *learning* approach is considered relevant to apply because it supports the holistic development of students' competencies, covering cognitive, affective, and psychomotor aspects proportion (Suyanto et al., 2025). This approach has a wide range of applications in various subjects, including Indonesian Language.

In Indonesian Language subjects, students must master various aspects. According to Mutira (2024), there are four aspects of Indonesian language skills: listening



(comprehension), speaking, reading, and writing. Reading skills are essential competencies that students need to master because they help them understand, re-express, and interpret the meaning of written symbols. In this activity, students utilize their visual function, eye movement coordination, internal verbal processes, and memory to build understanding of the text they read.

The ideal conditions for learning Indonesian must emphasize the development of thinking and reasoning skills and the ability to read at an *interpretative* level of understanding (Mar'atuzzahidah & Sari, 2024). Reading ability indicators include basic literacy, recognition of written symbols, correct pronunciation, and discourse literacy skills, meaning that readers not only recognize written symbols but can also determine and select relevant reading material (Hariro et al., 2024).

In reality, reading skills remain a challenge in Indonesian language learning in elementary schools. Even though students are able to read texts, they often have difficulty summarizing the content of the reading material because their understanding is not yet comprehensive. (Agnesya & Wiarsih, 2025). According to Affandi & Kaltsum (2024), students' lack of familiarity with comprehensively understanding information and their high dependence on verbal explanations cause them to be less able to independently summarize what they read.

The results of *the Progress in International Reading Literacy Study* (PIRLS) show that the reading comprehension skills of Indonesian students are still in the low category. In this study involving fourth-grade elementary school students, Indonesia scored an average of 405, which is categorized as low and ranks 45th out of a total of 49 participating countries. This score is far below the international average of 500 with a standard deviation of 100 (PIRLS, 2022).

Based on observations and interviews conducted with fourth-grade teachers in September 2025, a number of obstacles encountered in the learning process were revealed. Some of these include students' difficulty in understanding the content of narrative reading, limited variety of learning resources, and the use of learning media that has not been optimized. In addition, some students were found to be unable to read fluently.

Based on these problems, the development of interactive multimedia is proposed to improve narrative text comprehension skills. Interactive multimedia is considered capable of strengthening students' reading skills more effectively and efficiently by presenting material in a way that uses time more efficiently than conventional learning. As a technology in education, interactive multimedia has the potential to optimize the learning process when appropriately designed and implemented (Rahayu et al., 2022).

Various previous studies have shown that interactive media contributes significantly to improving the quality of learning, especially in reading comprehension skills. Research conducted by Hanan Faizatuzahra & Sukardi (2024) developed ARTESI (Learning Narrative Texts) digital multimedia for sixth-grade elementary school students. The N-gain test result of 0.62 showed an improvement in reading skills in the moderate category. These findings are in line with the research conducted by (Afifah et al., 2022), who developed Genially-based interactive learning media for fairy tale material in elementary schools. The results of expert validation showed a high level of feasibility, with a one-on-one trial score of 83.33% and a limited trial score of 89.7%, both of which were in the very feasible category. The results of research conducted by Aulia & Nuryanto (2023) show that interactive media can be declared feasible for use as a learning tool. These findings prove that the use of interactive media contributes significantly to improving students'



reading comprehension skills. Previous studies have shown that interactive media can improve students' reading comprehension skills. However, limited studies have developed interactive multimedia for narrative text that is deliberately aligned with the Merdeka Curriculum and explicitly designed to support deep learning processes. Therefore, the novelty of this study lies not only in producing an interactive narrative-text multimedia (Medtenar), but also in embedding deep learning principles into its instructional features. Medtenar applies scaffolding by guiding students from basic understanding to more complex comprehension through staged activities: (1) orientation and learning objectives, (2) explicit explanation of narrative text elements (characters, setting, plot, and moral values), (3) worked examples and guided practice, and (4) independent practice through quizzes. To promote reflection, the media provides prompts that ask students to justify answers and revisit parts of the text when errors occur, encouraging self-monitoring during reading. In addition, Medtenar includes higher-order thinking questions (e.g., inferential, evaluative, and appreciative questions based on Barrett's taxonomy) that require students to interpret implied meanings, evaluate characters' actions, and connect the text to prior knowledge or real-life situations. These features are consistent with the deep learning orientation of developing students' conceptual understanding and reasoning, and they support the Merdeka Curriculum's emphasis on meaningful, student-centered learning rather than rote memorization.

This study aims to develop, validate, and evaluate the effectiveness of Medtenar—an interactive multimedia tool grounded in the Merdeka Curriculum and the deep learning approach—to enhance fourth-grade students' narrative text reading comprehension at SD Negeri 01 Bringin. Thus, the development of interactive multimedia narrative texts is necessary to help improve the reading comprehension skills of fourth-grade students who will later take the Computer-Based National Assessment (ANBK) in fifth grade. Therefore, this research is urgent and contributes to Indonesian language learning in elementary schools.

## **Research Method**

This study used a Research and Development (R&D) method with the ADDIE model (Analyze, Design, Development, Implementation, Evaluation) (Branch, 2009). The research and development method was chosen because it facilitates researchers in producing, developing, and validating educational products scientifically (Rustamana et al., 2024). In the Analyze stage, classroom observations and teacher interviews were conducted to identify students' difficulties in narrative text reading comprehension, available learning resources/media, and learning needs aligned with the Merdeka Curriculum. In the Design stage, the learning flow, content structure, and assessment activities in Medtenar were planned; deep learning principles were embedded through scaffolding (from guided to independent practice) and comprehension tasks that move beyond literal understanding (e.g., inferential and evaluative questions). In the Development stage, Medtenar was produced using Canva and Articulate Storyline 3, then revised based on expert validation (media and material/language) analyzed using Aiken's V. In the Implementation stage, Medtenar was tested through a one-to-one pilot test (n=7) and a field test (n=25) using a pretest–posttest procedure, complemented by student and teacher response questionnaires. In the Evaluation stage, the product was refined using formative feedback, and effectiveness was determined by analyzing pretest–posttest data using the Shapiro–Wilk normality test, paired-samples t-test, and N-gain.



The population in this study consisted of 25 fourth-grade students at Bringin 01 Public Elementary School. This study used a *nonprobability* sampling technique, specifically saturated sampling. Saturated sampling was used because the population size was relatively small, less than 30 people (Sugiyono, 2016). In addition, a *pilot test (one to one)* was conducted with a sample size of 7 students from Podorejo 01 Public Elementary School.

The instrument development was carried out systematically with reference to the data collection techniques used, namely tests and non-tests. Non-test instruments included observation involving direct and regular supervision and involvement of teachers in the skills, behavior, and interactions of students in learning (Hidayat et al., 2023), interviews, questionnaires, and documentation. Meanwhile, test techniques use *pre-tests* and *post-tests*. Before use, the questions are compiled based on a grid according to Barret's taxonomy reading comprehension indicators, which consist of literal comprehension, reorganization, inferential comprehension, evaluation, and appreciation (Fitriana, 2022). Data analysis was conducted in two stages: initial and final analyses. In the initial analysis, feasibility was examined through expert validation and quantified using Aiken's V. The product was interpreted as highly feasible when  $V \geq 0.80$ , feasible when 0.60–0.79, fairly feasible/needs revision when 0.40–0.59, and not feasible when  $V < 0.40$  (Rachmawati et al., 2023). Practicality was determined from student and teacher response questionnaires using descriptive percentage categories: 0–25% (not practical), >25–50% (less practical), >50–75% (practical), and >75–100% (very practical) (Usmaedi et al., 2020).

Before the field implementation, test items were analyzed for validity, reliability, discriminating power, and difficulty level using SPSS 26. In the final analysis, effectiveness was evaluated using pretest and posttest scores. Data normality was tested using the Shapiro–Wilk test; pretest–posttest differences were examined using a paired-samples t-test; and learning improvement was measured using normalized gain (N-gain). N-gain was interpreted as high ( $g \geq 0.70$ ), moderate ( $0.30 \leq g < 0.70$ ), and low ( $0.00 < g < 0.30$ ) (Sukarelawan et al., 2024). In addition, the effectiveness level was reported by converting N-gain into a percentage and interpreting it as: <40% (not effective), 40–55% (less effective), 56–75% (fairly effective), and >76% (effective) (Sukarelawan et al., 2024).

## **Result and Discussion**

### **Development of Interactive Multimedia Narrative Text (Medtenar)**

The development of interactive multimedia narrative text (Medtenar) was carried out based on the ADDIE stages. The development results are presented as follows

#### **1) Analyze**

The initial stage of research and development (R&D) for interactive multimedia narrative text (Medtenar) was conducted through observation and interviews with fourth-grade teachers at Bringin 01 Public Elementary School. This activity aimed to provide an overview of Indonesian language learning, identify the obstacles encountered, and analyze media needs aligned with students' characteristics. The data obtained was analyzed descriptively to confirm the urgency of developing media to support narrative text comprehension skills in fourth grade.

Based on the results of interviews with fourth-grade teachers, it was found that there were students who were not yet able to read well and students who were fluent in reading but did not understand the content of the reading material. This is in line with the research Sakinah & Ibrahim (2023), which revealed that fourth-grade students still face obstacles in understanding the content of texts and repeating the information they have

read. In addition, students also experience difficulties in identifying the characters in the reading and mentioning their names correctly. In fact, reading comprehension is one of the skills that students must have. Reading comprehension can be defined as a cognitive process of interpreting and capturing the meaning of a text that represents the thoughts, ideas, concepts, and perspectives of the author (Hanan Faizatuzahra & Sukardi, 2024). In addition, it was also found that the variety issues, the development of interactive multimedia narrative text (Medtenar) is proposed as a means to improve student's reading comprehension skills. This multimedia is equipped features that can be used by students.

## 2) Design

The product was developed based on interviews with fourth-grade teachers and produced an interactive multimedia narrative text (Medtenar) to support reading comprehension skills in Indonesian language learning. The media was designed using Canva and developed through *Articulate Storyline 3*. The interactive narrative multimedia text (Medtenar) contains several main components: the home page, instructions for use, identity form, learning outcomes and objectives, materials, narrative text examples, quizzes, developer profiles, and references. This design was created to support systematic, focused reading comprehension. In line with research, the combination of text, illustrations, and interactive features strengthens the construction of conceptual understanding. The integration of various forms of representation facilitates learners in processing information visually and verbally simultaneously. In addition, the application of interactive multimedia accompanied by problem-solving activities and exercises encourages learners to construct knowledge actively and independently. The following is a multimedia design developed to support systematic and targeted reading comprehension learning.

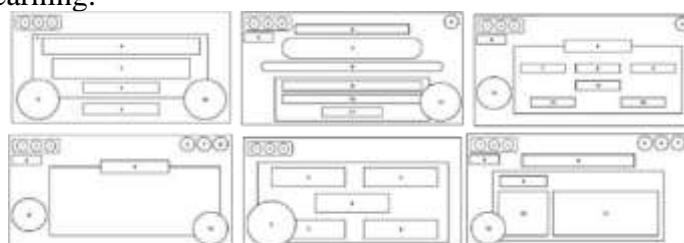


Figure 1. Interactive Multimedia Design for Narrative Text (Medtenar)

## 3) Development

At this stage, the product is created based on what has been prepared in the design stage. The Interactive Multimedia Narrative Text (Medtenar) for reading comprehension skills is developed in *Articulate Storyline 3*.



Figure 2. Interactive Multimedia Narrative Text (Medtenar) Design Display.



The media can be accessed via *the* following *link*.

[https://lintangardipratiwi-dot.github.io/MultimediaInteraktifTeksNarasi\\_Medtenar/](https://lintangardipratiwi-dot.github.io/MultimediaInteraktifTeksNarasi_Medtenar/)

Next is the feasibility assessment by media, material, and language experts. The purpose of this validation is to assess the feasibility of the product in terms of appearance or visuals, and to determine the quality of the material contained in the interactive multimedia narrative text (Medtenar). The instrument consists of 15 statements for each expert that assess the aspects of appearance or visuals, content (material), and instruction. The following is a summary of the feasibility assessment by media experts and language material experts.

**Table 1. Summary of Feasibility Assessment Results by Experts**

No	Expert Validator	Score Obtained	Maximum Score	Percentage	Assessment Criteria
1.	Media	59	60	0.977	Very Good
2	Content and Language	57	60	0.952	Highly Suitable

Expert validation results confirmed that Medtenar is highly feasible in terms of media design and material/language quality, making it appropriate for fourth-grade learning with only minor revisions required based on expert feedback. Following the revisions, the multimedia was prepared for student testing. Prior to the one-to-one pilot test, a trial test was conducted with 22 fourth-grade students from another school to ensure the reading comprehension test items met the required criteria of validity, reliability, discriminating power, and difficulty level. Only items that passed the analysis in SPSS 26 were retained for use in the subsequent pilot and field tests.

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The one-to-one pilot test was then conducted involving seven fourth-grade students from Podorejo 01 Public Elementary School, selected to represent varying proficiency levels: very proficient, proficient, and less proficient. This stage aimed to assess students' understanding of the material, appearance, and usability of Medtenar. Students were given a pretest before learning to measure their initial abilities, followed by Medtenar-based learning until all participants understood the material and could operate the multimedia independently. After the learning session, students completed a posttest to measure their final abilities, along with a response questionnaire that yielded an average score of 89%, categorized as "Very Practical." The pretest and posttest results were analyzed to evaluate the effect of multimedia use and to identify areas for improvement before proceeding to a wider-scale field test. The collected data were further analyzed using a normality test as a basis for the next stage of development.



**Table 2. Normal Distribution Data of One-to-One Test**

Class	Sig	$\alpha$	Description
Pre-test Score	0.953	0.05	Normal
One to One Posttest Score	0.603	0.05	Normal

The Shapiro–Wilk test indicated that the pretest and posttest scores were normally distributed ( $p > 0.05$ ); therefore, parametric analysis using a paired-samples t-test was appropriate.

After the *pretest* and *posttest* data from the limited trial (*One to One*) were found to be normally distributed, data analysis continued with a *paired sample t-test*. This test aimed to examine the difference in reading comprehension learning outcomes in fourth grade before and after using the interactive multimedia narrative text (Medtenar). This test was used because the *pretest* and *posttest* data came from the same students, thereby creating a paired design. The results are presented in the following table.

**Table 3. Results of the Paired Sample t-test for One to One Test Data**

Coefficient Correlation	Small Scale Usage Test			N-Gain
	T	Df	Sig. (2-tailed)	
Pretest-Posttest	-7.282	6	0.001	0.6164

The paired-samples t-test showed a significant difference between pretest and posttest scores ( $p < 0.05$ ), indicating improved reading comprehension after using Medtenar. The analysis then continues with an N-gain analysis to assess the effectiveness level of the multimedia developed, as outlined in " " (Kumalasari et al., 2023) . The following are the results of the N- gain test in the *one-to-one* trial. The one-to-one pilot test produced a moderate N-gain ( $g = 0.6164$ ), indicating fairly effective improvement and supporting continuation to the field test.

#### 4) Implementation

The implementation of the product is the stage of applying the media that has been revised based on the results of media validation and subject matter experts (Wahyuni & Arini, 2024). This stage was carried out on 25 fourth-grade students at Bringin 01 Public Elementary School. At this stage, the treatment applied was the same as in *the one-to-one pilot test*, namely administering a *pretest* before learning and a *posttest* and response questionnaire after using interactive multimedia narrative texts (Medtenar).

The implementation stage was carried out in the fourth-grade classroom at Bringin 01 Public Elementary School by conducting learning activities in accordance with the Deep Learning Implementation Plan (RPPM), which prepared, and included which included narrative text material for reading comprehension skills. Before the learning began, the students took a *pretest*, and then they were formed into groups for learning activities using interactive multimedia narrative texts (Medtenar). At the end of the learning process, students were given a *posttest* and a response questionnaire. Throughout the learning activities, from start to finish, the students showed high enthusiasm. Due to the use of interactive multimedia, the students also asked more questions and participated more in the series of learning activities. This is in line with the research conducted by Bulan et al.(2025), which reveals that the



integration of interactive learning media has been proven to increase student engagement in the learning process because it provides responsive two-way interaction.

Medtenar is designed to facilitate deep learning by guiding students to construct meaning, not merely decode text. Through a structured sequence (objectives–material– examples–quiz), the media scaffolds comprehension from identifying explicit information to interpreting the story and its message.

This scaffolding aligns with Barrett’s taxonomy used in the assessment. The quiz activities move beyond literal comprehension toward inferential and evaluative understanding (e.g., drawing conclusions from implicit information and judging characters’ actions or moral values). Therefore, the moderate learning gain found in this study may be influenced by the limited duration of use and the complexity of narrative comprehension at higher-order levels, which typically requires repeated practice across multiple texts.

Then, the data obtained at this stage, namely the learning outcomes of students, questionnaires from students and teachers, were analyzed using practicality tests, normality tests, paired sample t-tests, and N-gain tests.

## 5) Evaluation

Evaluation can be understood as a series of systematic processes carried out to measure and assess students’ abilities in knowledge, attitudes, and skills, as a basis for determining competency achievement (Nadya et al., 2024). In this study, formative and summative evaluations were carried out through a pilot test (one-to-one) and a large-scale field test to measure changes in students’ reading comprehension skills before and after using interactive narrative text multimedia (Medtenar). Data were collected through response questionnaires and test results, which showed the percentage of multimedia practicality and its effectiveness in narrative text reading comprehension skills.

The student response questionnaire was tested using a practicality test, with results indicating a practicality level of 86% in the “very practical” category. Meanwhile, the teacher response questionnaire obtained a percentage of 95% in the “very practical” category. Based on students’ and teachers’ responses, the interactive multimedia narrative text (Medtenar) features a combination of colors that supports comfort, clear audio, attractive visuals, and the presentation of material through images that aid understanding. The high percentage of positive responses indicates that the use of interactive multimedia narrative (Medtenar) has strong potential to increase student motivation to learn and clarify understanding of the concepts being studied. These findings align with the views of Nursyahraini et al., (2020), who emphasize that structured, well-presented material can increase student participation and enhance the effectiveness of information transfer in the learning process.

A large-scale trial was conducted to assess the effectiveness of interactive narrative text multimedia (Medtenar) in a more representative learning situation and to test the consistency of learning outcome improvement in a wider number of students. The *pretest* and *posttest* data obtained from the field trial were then analyzed and summarized through a normality test, the results of which are shown in the following table.

**Table 4. Normality Test Results for Field Test Data (Large Scale)**

**Shapiro-Wilk**



	Statistics	Df	Sig	$\alpha$	Description
Score Pretest	0.952	25	0.279	0.05	Normal
Score Posttest	0.946	25	0.205	0.05	Normal

The Shapiro-Wilk normality test results show that both pretest ( $W = 0.952$ ;  $p = 0.279$ ) and posttest ( $W = 0.946$ ;  $p = 0.205$ ) data are normally distributed ( $p > 0.05$ ), allowing further analysis using a paired sample t-test. After the data in the large-scale trial was declared to be normally distributed, data analysis was continued with a *paired sample t-test* to determine whether there was a significant difference between the *pretest* and *posttest* scores after the students used interactive multimedia narrative texts (Medtenar). The following are the t-test results in the field test (large scale).

**Table 5. Results of the Paired t-test for Field Test Data (Large Scale)**

Coefficient Correlation	Large-Scale Test		
	T	Df	Sig. (2-tailed)
Pretest-Posttest	-10,716	24	0,001

The paired-samples t-test indicated a significant improvement in reading comprehension after using Medtenar ( $p < 0.05$ ). To determine the effect of using interactive multimedia narrative texts (Medtenar) in more depth, a further analysis was conducted using the mean gain test (N-gain). This analysis aims to measure the effectiveness of a learning treatment or intervention by comparing the *pretest* and *posttest* scores of the (Maharani et al., 2025). The following are the results of the N-gain test analysis in the field trial (large scale).

**Table 6. Results of the N-gain Test Analysis of the Field Trial (Large Scale)**

Number of Students	Average		Difference	N-Gain	N-Gain (%)	Criteria	Effectiveness	Std. Dev
	PreTest	PostTest						
25	48.32	80.28	31.960	0.5997	59.9%	Moderate	Fairly Effective	0,21

The field test results showed a moderate N-gain ( $g = 0.5997$ ), indicating that Medtenar is fairly effective in improving fourth-grade students' narrative text reading comprehension. This improvement suggests that the multimedia features (examples, illustrations, and interactive quizzes) supported students in monitoring and strengthening their comprehension during reading. These findings are consistent with Hanan Faizatuzahra & Sukardi (2024), who reported that the use of digital multimedia for narrative text instruction improved elementary students' reading comprehension, as indicated by increased learning outcomes and a moderate normalized gain (N-gain). This suggests that presenting the content with worked examples, visual illustrations, and interactive practice/quiz activities can foster active engagement in reading and help students check and strengthen their comprehension during learning.

The moderate gain indicates meaningful progress but not yet optimal improvement. This may be influenced by the limited duration of media use during the trial, the complexity of inferential–evaluative comprehension, and differences in students' initial



reading fluency and prior knowledge. Therefore, longer implementation and more varied texts and higher-order/reflection tasks are recommended to further strengthen learning gains. This pattern of improvement, which remains in the moderate category, aligns with the findings of Halik et al. (2025), which indicate that improvements in reading comprehension among fourth-grade students through interactive video media occur gradually and require sustained engagement in learning. These findings indicate that although interactive media effectively aids comprehension, learning outcomes may not be optimal if the duration of media use is relatively limited and students still face more complex comprehension demands. Therefore, recommendations for longer implementation periods accompanied by varied texts and higher-order/reflective tasks are relevant to strengthen improvements in learning outcomes.

### **Conclusion**

The conclusion obtained from the results of this study is that the feasibility test results indicate that Medtenar is highly feasible for use in fourth-grade Indonesian language learning, based on expert validation of media design, material, language, and technical aspects. In addition, the practicality results indicate that Medtenar is very practical, as shown by positive responses from teachers and students during the trials. Furthermore, the effectiveness results indicate that the use of Medtenar improves students' narrative text reading comprehension, as evidenced by significant differences between pretest and posttest scores with a moderate N-gain. Therefore, Medtenar can be recommended as a learning medium to support narrative text reading comprehension in Grade 4 within the Merdeka Curriculum and deep learning framework.

### **Recommendation**

Based on the results of this study, several follow-up recommendations are proposed. For teachers, Medtenar may be implemented as a supplementary medium in narrative text learning by combining its use with brief guided reading, questioning, and discussion activities, particularly to support students in answering inferential and evaluative comprehension questions. Teachers are also encouraged to use students' quiz and test results as formative feedback to identify learning difficulties and plan remedial or enrichment activities.

For learning media developers, future improvement of Medtenar should prioritize the provision of more varied and differentiated narrative texts and tasks (e.g., graded levels) to accommodate heterogeneous reading abilities. Developers may also consider adding simple learning analytics features, such as automatic score summaries and progress tracking, to provide more continuous information on students' learning development.

For future researchers, it is recommended to conduct broader trials in different school contexts with larger samples and longer implementation periods to strengthen external validity and to examine the consistency of learning gains, including the potential for improvement from the moderate category to higher effectiveness levels.

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