

DEVELOPMENT OF INTERACTIVE MULTIMEDIA FUN EXPLANATION TO IMPROVE SIXTH-GRADE STUDENTS' READING COMPREHENSION OF EXPLANATORY TEXTS

Aulia Rahmawati^{1*}, Andarini Permata Cahyaningtyas²

^{1,2}Universitas Negeri Semarang

¹auliarahmawati30@students.unnes.ac.id

Abstract

Elementary school students' ability to read and understand explanatory texts still needs to be improved, while the use of learning media that supports the process of understanding texts interactively is still limited. This study aims to develop a feasible and effective interactive multimedia Fun Explanation to improve the ability to read and understand explanatory texts of sixth-grade elementary school students. This study uses the Research and Development (R&D) method with the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The research subjects consisted of 28 sixth-grade students of SD Negeri Wates 01 Semarang. The feasibility of the product was assessed by material experts, media experts, and educational practitioners, while the effectiveness of the product was tested through a one-group pretest-posttest design. Data collection techniques used interviews, observations, questionnaires, and tests. Data were analyzed descriptively and quantitatively, using the Wilcoxon test and N-Gain. The results showed that the interactive multimedia Fun Explanation obtained an average validation score of 94.1% with a very feasible category. The results of the Wilcoxon test showed a significant difference between the pretest and posttest scores ($Z = -4.549$; $p < 0.05$). Furthermore, the N-Gain value of 0.6417 indicates that the developed multimedia is quite effective in improving students' reading comprehension skills. Students' responses to the use of multimedia reached 86%, categorized as very good. Thus, the interactive multimedia Fun Explanation is considered very feasible and quite effective for use in teaching reading comprehension of explanatory texts in elementary schools.

Keywords: Interactive Multimedia; Reading Comprehension; Explanatory Text; Deep Learning

Abstrak

Kemampuan membaca pemahaman teks eksplanasi siswa sekolah dasar masih perlu ditingkatkan, sementara penggunaan media pembelajaran yang mendukung proses memahami teks secara interaktif masih terbatas. Penelitian ini bertujuan mengembangkan multimedia interaktif Fun Explanation yang layak dan efektif untuk meningkatkan kemampuan membaca pemahaman teks eksplanasi siswa kelas VI sekolah dasar. Penelitian ini menggunakan metode Research and Development (R&D) dengan model ADDIE yang meliputi tahap analysis, design, development, implementation, dan evaluation. Subjek penelitian terdiri atas 28 siswa kelas VI SD Negeri Wates 01 Semarang. Kelayakan produk dinilai oleh ahli materi, ahli media, dan praktisi pendidikan, sedangkan efektivitas produk diuji melalui desain one-group pretest-posttest. Teknik pengumpulan data menggunakan wawancara, observasi, angket, dan tes. Data dianalisis secara deskriptif kuantitatif, uji Wilcoxon, dan N-Gain. Hasil penelitian menunjukkan bahwa multimedia interaktif Fun Explanation memperoleh rata-rata skor validasi sebesar 94,1% dengan kategori sangat layak. Hasil uji Wilcoxon menunjukkan adanya perbedaan yang signifikan antara nilai pretest dan posttest ($Z = -4,549$; $p < 0,05$). Selain itu, nilai N-Gain sebesar 0,6417 menunjukkan bahwa multimedia yang dikembangkan cukup efektif dalam meningkatkan kemampuan membaca pemahaman siswa. Respon peserta didik terhadap penggunaan multimedia memperoleh persentase sebesar 86% dengan kategori sangat baik. Dengan demikian, multimedia interaktif Fun Explanation dinyatakan sangat layak dan cukup efektif untuk digunakan dalam pembelajaran membaca pemahaman teks eksplanasi di sekolah dasar.

Kata Kunci: Multimedia Interaktif; membaca pemahaman; teks eksplanasi; pembelajaran mendalam

Received : 2026-04-24

Approved : 2026-07-06

Revised : 2026-06-26

Published : 2026-07-31



Jurnal Cakrawala Pendas is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Introduction

National education functions to develop abilities and shape the character and civilization of a dignified nation. Education aims to develop students' potential to become people who are faithful and pious, have noble character, are healthy, knowledgeable, capable, creative, and independent, and become democratic and responsible citizens (Indonesia, 2003). This mandate emphasizes the importance of literacy as a key pillar of knowledge and skill mastery. Literacy, particularly reading comprehension skills, is a crucial foundation for achieving national education goals in the era of globalization. In line with this mandate, the Independent Curriculum is designed to strengthen literacy through in-depth learning that emphasizes comprehensive and applicable conceptual understanding. This approach focuses not only on mastery of the material but also on shaping the profile of graduates, using eight key dimensions as a foundation for 21st-century skills. Therefore, literacy is positioned as the foundation for developing critical thinking, creativity, and collaboration skills in the learning process, which are then further elaborated in learning outcomes at each phase of basic education.

In the Independent Curriculum, learning outcomes in elementary schools are divided into three phases: Phase A (grades I–II), Phase B (grades III–IV), and Phase C (grades V–VI). According to the Decree of the Head of the Education Standards, Curriculum, and Assessment Agency of the Ministry of Primary and Secondary Education Number 046/H/KR/2025, the Indonesian language subject includes reading and listening components. In Phase C, reading skills focus on understanding the content, identifying the main idea, interpreting meaning, and evaluating the information obtained. Thus, reading comprehension is an important key for students in building strong literacy to face the challenges of modern development. According to a report by UNICEF and partner institutions, including the World Bank and UNESCO, approximately 70% of 10-year-olds in low- and middle-income countries experience learning poverty, meaning they cannot read and understand simple texts (UNICEF, 2022a). In South Asia, the percentage even increases to approximately 78%. Learning Poverty Indicators often use data from grades 4–6 of elementary school as the final benchmark for primary education, indicating that most students at that age have not yet achieved adequate reading literacy (UNICEF, 2022b). A similar situation also occurs in Indonesia, where National Assessment results indicate that one in two students from elementary school (SD/MI) to high school (SMA/MA) have not achieved minimum reading literacy competencies (Kemendikdasmen, 2022). This fact demonstrates that reading comprehension skills remain a fundamental issue that requires serious attention from primary education onward.

In reality, based on the results of initial observations conducted by researchers at SDN Wates 01 Semarang on September 11, 2025, sixth-grade teacher Ms. Dessy Anggraeni, S.Pd. revealed that sixth-grade students still have difficulty understanding the content and ideas in a text. Students tend to understand only explicit information and are unable to draw inferences or make evaluations. The teacher stated that the learning methods used are still predominantly lectures, direct reading from books, and the use of videos or simple images. The limitations of interactive learning media cause students to become quickly bored, resulting in decreased motivation to learn. Field conditions indicate that the potential of technology has not been fully utilized to support reading comprehension. Schools have basic facilities such as computers and LCDs, but the use of digital-based media for explanatory texts is not optimal. Media that combine visual, audio, and interactive elements are believed to improve students' understanding and motivation. Therefore, the development of interactive multimedia is an urgent need.

Reading comprehension is the ability to understand, interpret, and construct meaning from the information contained in a text. This ability encompasses not only recognizing explicit information but also connecting information, drawing conclusions, evaluating the content of the reading, and appreciating the message conveyed in the text. According to Barrett's Taxonomy, reading comprehension consists of several levels: literal comprehension, reorganization, inferential comprehension, evaluative comprehension, and appreciative comprehension (Fitriana, 2022). Therefore, reading comprehension instruction needs to be designed to help students develop more complex thinking skills so they can understand information in depth.

As technology advances, reading activities are no longer limited to written text but also involve various forms of information representation such as images, audio, video, animation, and interactive elements. This condition gives rise to the concept of multimodal reading, namely the ability to understand and integrate information presented through various modes of communication simultaneously. Recent research shows that multimodal reading skills are an important competency for elementary school students in facing the digital learning environment (Liu, 2025). Students are not only required to understand the content of the text but also to connect information from various media to build a complete understanding.

Mayer's Cognitive Theory of Multimedia Learning emphasizes the value of presenting information through multiple modes of representation. The theory suggests that students learn more effectively when verbal information is accompanied by relevant visual elements, as this combination facilitates cognitive processing and knowledge construction. The integration of text, images, audio, video, and animation in multimedia learning environments can optimize working memory functions and improve students' comprehension of instructional content (Mayer, 2020). Consequently, interactive multimedia can serve as an effective instructional tool for strengthening elementary school students' reading comprehension skills, particularly in learning explanatory texts that require the understanding of abstract ideas and complex information.

A growing body of research has demonstrated the effectiveness of interactive multimedia in supporting elementary school learning. The incorporation of various media components provides students with richer learning experiences and promotes meaningful engagement with educational content. Furthermore, interactive multimedia enables learners to interact directly with learning materials, fostering greater participation, sustained attention, and increased motivation throughout the learning process.

Research conducted by Zunanik & Sulistyningrum (2026) shows that the use of interactive multimedia based on Problem-Based Learning (PBL) can improve higher-order thinking skills (HOTS) and motivation to learn among elementary school students. The results of this study indicate that presenting interactive, engaging materials can encourage students to be more active in exploring information and solving problems. Similar findings were reported by Ilma (2024), who found that ethnomathematics-based interactive multimedia can improve motivation to learn and creative thinking skills among elementary school students.

In addition to increasing student motivation and engagement, interactive multimedia has also proven effective in supporting literacy skills and student comprehension. The integration of various forms of information representation in multimedia enables students to gain a richer learning experience than using conventional text. Presenting information through a combination of text, images, animation, and audio can help students grasp concepts more deeply and facilitate the process of constructing meaning from the material being studied.

Although various studies have shown that interactive multimedia can improve learning motivation, creative thinking skills, HOTS, and student learning outcomes, research specifically focused on developing interactive multimedia to support the reading comprehension of explanatory texts among sixth-grade elementary school students remains limited. Syarah et al. (2025) found that interactive multimedia in explanatory text materials improves learning outcomes, while Amin et al. (2023) developed valid and effective interactive multimedia based on Adobe Animate at the MTs level. However, most of these studies focused on junior high school students or fifth-grade elementary school students and emphasized cognitive learning outcomes. Aspects of reading comprehension at the inferential and evaluative levels, student engagement, and the integration of fun learning principles have not been widely studied. Therefore, it is necessary to develop interactive multimedia specifically designed to improve the reading comprehension of explanatory texts in sixth-grade elementary school students.

This research gap highlights the need for innovation in the development of instructional media for reading comprehension of explanatory texts. Interactive media should not only focus on improving cognitive outcomes but also on encouraging active student engagement and enhancing motivation to learn. Integrating the concept of fun learning into interactive multimedia could be a solution to this challenge.

In the Independent Curriculum, Indonesian language learning is designed to support deep learning, emphasizing meaningful conceptual understanding and the ability to connect knowledge to real-life contexts. This approach is highly relevant for elementary school students, as they are building a foundation for thinking, learning skills, and character development that will prepare them for future academic growth (Widyastuti et al., 2025). Explanatory texts are a key component of deep learning, explaining various natural, social, and cultural phenomena that have cause-and-effect relationships (Agustinalia, 2022). These characteristics encourage students to deeply understand information, connect concepts, and develop critical thinking skills in understanding events.

The innovative aspect of this study is the development of Fun Explanation interactive multimedia, which combines fun learning principles, multimedia-based instruction, explanatory text reading comprehension, and the deep learning approach promoted in the Independent Curriculum for sixth-grade elementary school students. The multimedia is specifically designed to facilitate students' understanding of explanatory texts through the integration of visualizations, animations, audio elements, and interactive activities that promote active participation and critical thinking. In contrast to previous studies that mainly examined cognitive learning outcomes, this research focuses on strengthening reading comprehension skills at the inferential and evaluative levels by providing engaging, meaningful, and student-centered learning experiences. Therefore, this study aims to develop a valid, practical, and effective Fun Explanation interactive multimedia product to support the reading comprehension abilities of sixth-grade students at SDN Wates 01 Semarang.

Research Methods

This study used the Research and Development (R&D) method, an approach aimed at developing a product and testing its feasibility and effectiveness in learning (Branch, 2009). The product developed in this study was the interactive multimedia Fun Explanation to support elementary school students' reading comprehension of explanatory texts.

The development model used is ADDIE (Analysis, Design, Development, Implementation, Evaluation) by Branch (2009). The ADDIE model was chosen because it has systematic, structured, and flexible stages, making it suitable for use in developing learning

media. The research stages include needs analysis, product design, product development, product implementation, and evaluation.

In the analysis stage, researchers conducted observations and interviews with sixth-grade teachers at SDN Wates 01 Semarang to identify learning needs, student characteristics, reading comprehension issues in explanatory texts, and the availability of learning media used at the school. The results of the analysis were used as the basis for developing the interactive multimedia Fun Explanation.

In the design stage, researchers developed a multimedia plan, including material development, storyboarding, display design, navigation structure, and research instrument development. Next, in the development stage, the interactive multimedia Fun Explanation was created using predetermined software. The developed product was then validated by subject matter experts, media experts, and education practitioners before being revised based on the feedback provided.

The implementation phase was conducted through a product trial on sixth-grade students at SDN Wates 01 Semarang to determine the practicality and effectiveness of the Fun Explanation interactive multimedia. The evaluation phase was conducted formatively at each stage of development and summatively after implementation to assess the feasibility, practicality, and effectiveness of the developed product.

This research was conducted at Wates 01 Public Elementary School, Ngaliyan District, Semarang City, in March 2026. The research subjects were 28 sixth-grade students involved in the implementation stage to test the practicality and effectiveness of the Fun Explanation interactive multimedia in learning to read and understand explanatory texts. In addition to involving students as research subjects, this research also engaged validators to assess the feasibility of the product and research instruments. The validators consisted of a material expert, a media expert, and practitioners. The material expert was a lecturer in Elementary School Teacher Education with expertise in Elementary School Indonesian; the media expert was a lecturer with expertise in developing digital learning media; and the practitioners were two sixth-grade teachers with experience teaching in Elementary Schools. The material expert assessed the concept's accuracy and the use of language. The media expert was tasked with assessing aspects of the appearance, interactivity, navigation, and ease of use of the multimedia. The sixth-grade teacher, as an education practitioner, assessed the suitability of the multimedia to the learning needs in the classroom, the readability of the language, and the ease of implementation in the learning process. The assessment results from the validators were used as a basis for revising and refining the Fun Explanation interactive multimedia before it was implemented with students.

The instruments used in this study consisted of an expert validation sheet, a student response questionnaire, and a reading comprehension test for explanatory texts. Before being used in data collection, all instruments were validated through expert judgment by material experts, media experts, and sixth-grade teachers to ensure the suitability of the indicators, clarity of language, and relevance of the instruments to the research objectives.

An expert validation sheet was used to assess the feasibility of the Fun Explanation interactive multimedia. The material expert validation sheet covered content and language, while the media expert validation sheet covered appearance, interactivity, navigation, and ease of use. In addition, sixth-grade teachers assessed the suitability of the multimedia to the learning needs of elementary schools. A student response questionnaire was used to gather student feedback on the use of the Fun Explanation interactive multimedia. The assessment covered aspects of material, learning, ease of use, and product appearance (Surjono, 2017).

The reading comprehension test was used to measure students' reading comprehension of explanatory texts before and after using the interactive multimedia Fun Explanation. The test was administered as a pretest and a posttest using the same instrument. The test instrument consisted of 15 questions: 5 multiple-choice, 5 complex multiple-choice, and 5 descriptive. The question structure refers to indicators of reading comprehension abilities, including literal comprehension, reorganization, inferential comprehension, evaluative comprehension, and appreciative comprehension (Fitriana, 2022). The non-test instrument used a four-level Likert scale: 4 (very good), 3 (good), 2 (sufficient), and 1 (poor). The assessment results were used to determine the feasibility and practicality of the interactive multimedia Fun Explanation.

Before being used in research, the test instrument was validated by subject-matter experts through expert judgment. Validation was conducted to assess the questions' alignment with the learning objectives, indicators of reading comprehension, the accuracy of the material, the level of question difficulty, the clarity of language, and the suitability of the answer key. The validation results were used to revise and refine the instrument to ensure its suitability for pretests and posttests. The following table outlines the test instrument used.

Table 1. Test Instrument Grid

Learning Objectives	Level of Understanding	Number of Item	Question Format	Question Item Number
Through the activity of reading explanatory texts, students can explain the meaning and characteristics of explanatory texts correctly (C2)	Literal understanding	4	Multiple choice	1, 2, 3
			Essay	11
Through the use of interactive multimedia Fun Explanation, students can determine the main idea, supporting ideas, and important information in the explanatory text (C2)	Literal understanding	2	Multiple choice	4, 5
Through the use of interactive multimedia, students are able to conclude the contents of the explanatory text in a coherent manner based on the main ideas and information of the text correctly (C5)	Reorganization	2	Complex Multiple Choice	6, 7
Through reflection activities in the Fun Explanation multimedia, students can correctly relate events in the text to	Inferential understanding	4	Complex Multiple Choice	8, 9, 10
			Essay	13

relevant experiences (C4)				
Through Fun Explanation multimedia, students are able to accurately analyze the characteristics of explanatory texts that differentiate them from literary and non-literary texts. (C4)	Inferential understanding	1	Essay	12
Through discussion activities, students can evaluate the impact of the phenomena that occur in the explanatory text with appropriate arguments. (C5)	Evaluation	1	Essay	14
Through assignment activities, students can create alternative closing sections for explanatory texts that are logical, in accordance with the elements of the explanatory text, and accurately reflect reading comprehension. (C6)	Appreciation	1	Essay	15

Data collection in this study was conducted using observation, interviews, questionnaires, and tests. Observations and interviews were conducted during the needs analysis stage to obtain information on learning conditions, student characteristics, difficulties encountered in reading comprehension of explanatory texts, and the use of learning media in schools. The questionnaire technique was used to obtain data on the feasibility of the Fun Explanation interactive multimedia through assessments by material experts, media experts, and educational practitioners. In addition, the questionnaire was used to obtain students' responses regarding the use of the Fun Explanation interactive multimedia during the implementation stage. The test technique was used to measure students' reading comprehension abilities of explanatory texts before and after using the Fun Explanation interactive multimedia. The test was administered as a pretest and posttest, arranged according to reading comprehension indicators, including literal, reorganization, inferential, evaluative, and appreciative comprehension.

The data obtained in this study were analyzed qualitatively and quantitatively. Qualitative data, including observations and interviews, as well as suggestions and input from validators, were analyzed descriptively to inform product revisions and improvements. Quantitative data, including expert validation scores, student responses, and pretest-posttest results, were analyzed to determine the feasibility, practicality, and effectiveness of the Fun Explanation interactive multimedia.

The feasibility analysis was conducted using a four-level Likert scale, based on assessments by subject matter experts, media experts, and education practitioners.

Table 2. Likert Scale Assessment

Scale	Interpretation
4	Very appropriate/very worthy/ very suitable/strongly agree
3	Appropriate/proper/suitable/agree
2	Inappropriate/unsuitable/disagreeable
1	Very inappropriate/very disagree

Source: (Kurniawan, 2018)

To calculate the average validation score use the following formula:

$$\text{Average Percentage (P)} = \frac{\text{Total percentage}}{\text{Number of Validators}}$$

The percentage results are then interpreted based on the eligibility criteria that have been established based on the following criteria:

Table 3. Eligibility Criteria

Percentage Score Criteria	
80%-100%	Very Qualified
60%-80%	Qualify
40%-60%	Sufficiently Qualified
20%-40%	Eligible Smaller
0%-20%	Very Ineligible

Sumber: (Nurmandayanti et al., 2025)

Practicality analysis was conducted based on the results of the student response questionnaire using percentage calculations. The higher the percentage obtained, the higher the level of practicality of the Fun Explanation interactive multimedia. Before the effectiveness test was conducted, the normality of the pretest and posttest data was assessed using the Shapiro-Wilk test in IBM SPSS Statistics. The Shapiro-Wilk test was chosen because the sample size was fewer than 50 students ($n = 28$). Data were declared normally distributed if the significance value ($\text{Sig.} > 0.05$) and not normally distributed if the significance value ($\text{Sig.} < 0.05$).

To determine the difference in reading comprehension ability of explanatory texts before and after using the interactive multimedia Fun Explanation, a Paired Sample t-Test was used if the data were normally distributed, and a Wilcoxon Signed Rank Test if the data were not normally distributed. The test was conducted at the 5% significance level ($\alpha = 0.05$) (Edi, 2021).

The improvement in students' reading comprehension skills was analyzed using the N-Gain test obtained from the pretest and posttest scores. To calculate the N-Gain, the following formula and assessment categories were used:

$$\text{N-Gain} = \frac{\text{Posttest Score} - \text{Skor Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}}$$

Table 4. N-Gain Categories

N-Gain Score	Interpretation	Scale
$0,70 \leq g \leq 1,00$	High	4
$0,30 \leq g \leq 0,70$	Medium	3
$0,00 \leq g \leq 0,30$	Low	2
$g = 0$	No increase	0
$1,00 \leq g \leq 0,00$	Decrease	1

Sumber: (Sukarelawan et al., 2024)

The obtained N-Gain value is then interpreted according to the predetermined improvement categories

Result and Discussion

In the analysis stage of the research and development (R&D) of the interactive multimedia Fun Explanation, observation and interview activities were conducted with sixth-grade teachers at SD Negeri Wates 01 Semarang. This activity aims to obtain a factual picture of the implementation of Indonesian language learning, especially regarding obstacles that arise during the learning process, as well as to identify the need for learning media appropriate to students' characteristics and needs. Data from observations and interviews are then analyzed descriptively to determine the importance of developing learning media to support the Indonesian language learning process in the sixth grade at SD Negeri Wates 01, especially in the ability to read and understand explanatory texts.

Based on observations conducted at Wates 01 Public Elementary School, it was found that the implementation of Indonesian language learning in grade VI is still dominated by textbooks and YouTube videos. This tends to make students passively involved in learning activities in the classroom. The results of interviews with sixth-grade teachers revealed that many students at Wates 01 Public Elementary School still do not understand the content of texts, especially when determining the main idea in each paragraph. This difficulty indicates that students' reading comprehension skills still need improvement. When implementing learning, teachers usually use YouTube videos and word games played directly in class. However, the use of these media has not fully engaged all students or improved their understanding. Based on the results of these observations and interviews, it can be concluded that the development of more interactive and innovative learning media is needed to help students understand the content of the text, especially in determining the main idea of the paragraph. Therefore, the development of interactive multimedia Fun Explanation is important to increase the engagement and reading comprehension of sixth-grade students.

After conducting a needs analysis, the next stage is planning, which involves the initial design of the Fun Explanation interactive multimedia product. Fun Explanation: Interactive Multimedia is designed in Canva. This Interactive Multimedia design includes various menu components, including a display to start the interactive multimedia, usage instructions, a menu for entering user identity, learning outcomes, learning objectives, learning materials, examples of explanatory texts, quizzes, multimedia developer profiles, and references. The following is an overview of the Fun Explanation Interactive Multimedia design blueprint for reading comprehension that will be developed. In the product design process, a blueprint overview can help researchers to focus on the media concept to be created.

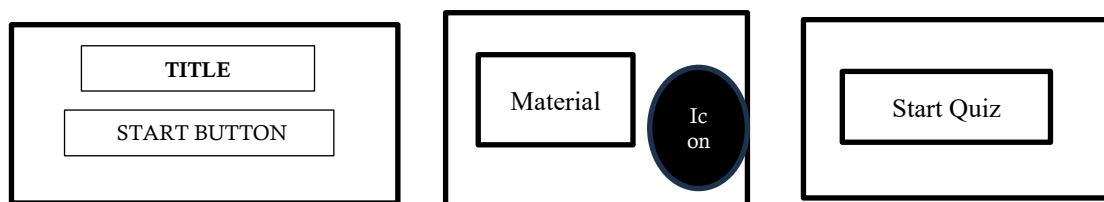


Figure 1. Display of the Fun Explanation Interactive Multimedia Blueprint

Next is the development stage. Fun Explanation interactive multimedia was developed to provide innovation in Indonesian language learning and provide students with the opportunity to practice their reading comprehension skills interactively. The content of this multimedia includes explanatory texts, supplemented with examples of various types of explanatory texts, audio explanations, guidance on understanding explanatory texts, and interactive quizzes. This Fun Explanation interactive multimedia for reading comprehension was developed using the Canva application, with the final output being a link. This Fun

Explanation interactive multimedia text is also equipped with various navigation buttons to facilitate student operation. The following is a screenshot of the Fun Explanation interactive multimedia for reading comprehension.

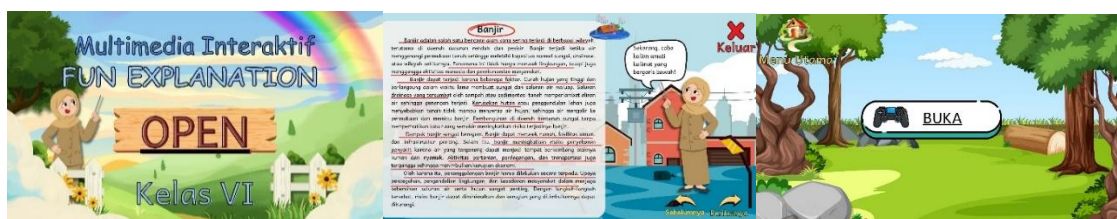


Figure 2. Display of the Interactive Multimedia Fun Explanation

The initial product is then consulted with material and media experts to obtain input before revisions are made. Media validation is an important stage in this research, aimed at assessing the product's feasibility in terms of appearance and visuals. At this stage, the multimedia product is validated by media experts. The assessor of the feasibility of Fun Explanation Interactive Multimedia is Mr. Bagas Kurnianto, M.Pd as a lecturer in the Elementary School Teacher Education (PGSD) study program at Semarang State University. This process is carried out to ensure that the developed product has met the feasibility criteria before being implemented in learning activities. The results of the assessment by media experts are then analyzed and used to inform improvements or refinements to the product. The validation results show that Fun Explanation interactive multimedia obtained an average feasibility score of 94.1% (very feasible), with the following details: material validator 95% (very feasible), media validator 91.6% (very feasible), and practitioner 95.8% (very feasible). This score falls within the "very suitable" category (Kurniawan, 2018). Thus, the Fun Explanation interactive multimedia is declared ready to proceed to the implementation stage. The validation results are also presented in the table below:

Table 5. Validation Results of Fun Explanation Interactive Multimedia

	Media Expert	Material Expert	Teachers
Score Obtained	55	76	207
Maximum Score	60	80	216
Percentage	91,6%	95%	95,8%
Assessment Criteria	Very Worthy	Very Worthy	Very Worthy

Before the product was implemented in the field test, the Fun Explanation interactive multimedia underwent a product trial. The product trial was conducted one-to-one with 7 sixth-grade students from SDN Wates 01, who were selected based on their level of understanding: very advanced, advanced, and less advanced. This trial aimed to test the interactive multimedia on a limited basis before large-scale use to assess the effectiveness of the revised instructions and to obtain feedback from teachers and students. The following are the results of the data analysis from the small-scale product trial.

Table 6. One-to-One Pretest-Posttest Normality Test

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.198	7	.200*	.926	7	.517
Posttest	.165	7	.200*	.933	7	.581

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

To evaluate the normality of the data distribution, the Shapiro–Wilk test was employed because the sample size consisted of fewer than 50 participants. In this study, data were collected from seven students; therefore, the Shapiro–Wilk test was considered appropriate for assessing normality. The results showed significance values of 0.517 for the pretest scores and 0.581 for the posttest scores. Since both values exceeded the threshold of 0.05, the pretest and posttest data were considered normally distributed.

Following the normality analysis, a paired-samples t-test was conducted to determine whether there was a significant difference in sixth-grade students' reading comprehension achievement before and after using the Fun Explanation Interactive Multimedia. This statistical procedure was selected because the pretest and posttest scores were obtained from the same group of students, resulting in paired observations. The analysis was performed using IBM SPSS Statistics with a significance level of 0.05. A significance value lower than 0.05 indicated that the alternative hypothesis (H_a) was accepted and the null hypothesis (H_0) was rejected, suggesting a significant difference between the pretest and posttest results. Conversely, a significance value greater than 0.05 indicated that the null hypothesis was accepted and the alternative hypothesis was rejected. The results of the small-scale implementation test are presented below.

Table 7. T-Test Pretest-Posttest One To One

		Paired Samples Statistics				
		Mean	N	Std. Deviation	Std. Error Mean	
Pair 1	Pretest	47.71	7	18.643	7.046	
	Posttest	76.71	7	14.773	5.584	

		Paired Samples Test							
		Paired Differences				95% Confidence Interval of the Difference		t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		Lower	Upper		
Pair 1	Pretest - Posttest	-29.000	5.657	2.138		-34.232	-23.768	-13.564	.000

Based on the t-test using SPSS in the table above, the significance value (2-tailed) is 0.001. From this value, it can be concluded that $0.001 < 0.05$, indicating that the hypothesis H_a is accepted. Therefore, there is a significant difference in learning outcomes after students use the Fun Explanation Interactive Multimedia.

To assess the effectiveness of the developed product, an N-Gain analysis is required. After the development process is complete, initial and final ability measurements are administered via pretests and posttests to assess improvements in students' reading comprehension of explanatory texts. The magnitude of this improvement is then calculated using the Normalized Gain formula to determine the overall category of improvement. Furthermore, to interpret the intervention's effectiveness, the N-Gain results are classified according to the effectiveness assessment criteria, as presented in the following table

Table 8. N-Gain pretest-posttest one-to-one

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ngain_skor	7	.38	.82	.5971	.15276
ngain_persen	7	37.84	82.35	59.7089	15.27615
Valid N (listwise)	7				

Based on the table, the N-gain test result for the small group (one-to-one) test was 0.5971. The N-gain results above indicate that the improvement in reading comprehension of explanatory texts among fourth-grade students at Wates 01 Elementary School is moderate, with a moderate level of effectiveness.

After being declared feasible, the Fun Explanation interactive multimedia was implemented in Indonesian language lessons for sixth-grade students at Wates 01 Elementary School, Semarang, involving 28 students, specifically on the topic "Pause for Climate" in explanatory texts. The implementation phase aimed to assess student responses, the effectiveness of the Fun Explanation interactive multimedia, and student engagement during the learning process. The implementation process was carried out through a series of learning activities in accordance with the In-Depth Learning Implementation Plan (RPPM) prepared by the researcher and declared feasible by the material validator. Before the lesson began, students were given a pretest with 15 questions. The questions were in the form of 5 multiple-choice questions, 5 complex multiple-choice questions, and 5 essay questions, with a 20-minute time limit. The purpose of administering a pretest is to assess students' initial abilities.



Figure 3. Implementation of the Fun Explanation Interactive Multimedia product

In the learning process, 28 students were divided into six groups. This field trial was conducted in one learning day. At this stage, students were asked to use the Fun Explanation interactive multimedia. Students first received a Student Worksheet (LKM), then opened the Fun Explanation interactive multimedia link. Students answered the questions contained in the Student Worksheet (LKM) by reading the text contained in the Fun Explanation interactive multimedia. After completing the Student Worksheet (LKM), students proceeded to the next activity according to the learning flow. Students used the Fun Explanation interactive multimedia with one learning process. After completing the learning activities with the Fun Explanation interactive multimedia, students were asked to work on 15 posttest questions, with the same details as the pretest questions. Before closing the learning activity, students completed the response questionnaire provided after learning, using the Fun Explanation interactive multimedia.

Evaluation stage: after the field trial was carried out, an evaluation was conducted on the Fun Explanation interactive multimedia product to measure the level of achievement of learning objectives and the effectiveness of Fun Explanation interactive multimedia in supporting reading comprehension skills for explanatory texts. Data obtained through pretest & posttest scores and response questionnaires given to students. The collected data were analyzed using SPSS software version 25. The initial data analysis at this stage involved calculating tests of normality for the pretest and posttest scores for the learning outcomes of fourth-grade students at SD Negeri Wates 01. Data analysis was conducted using IBM SPSS Statistics. The Shapiro–

Wilk test was employed to examine the normality of the data distribution. A significance value greater than 0.05 indicated that the data were normally distributed, while a significance value less than 0.05 suggested a non-normal distribution. These criteria were used to determine the suitability of subsequent parametric statistical analyses.

Table 9. Normality test of pretest-posttest field test

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.117	28	.200*	.966	28	.475
Posttest	.204	28	.004	.819	28	.000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the results of the Shapiro-Wilk normality test, the pretest significance value was 0.475 (> 0.05), indicating that the data were normally distributed. Meanwhile, the posttest significance value was 0.001 (< 0.05), indicating that the data were not normally distributed. Therefore, further data analysis used the nonparametric Wilcoxon test.

Table 10. Wilcoxon pretest-posttest field test test

Ranks				
		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	27 ^b	14.00	378.00
	Ties	1 ^c		
	Total	28		

a. Posttest $<$ Pretest

b. Posttest $>$ Pretest

c. Posttest = Pretest

Based on the Ranks table in the Wilcoxon test, the number of data points shows an increase (positive ranks), a decrease (negative ranks), and data that does not change (ties). If the number of positive ranks is greater than the number of negative ranks, it can be interpreted as an increase in scores from the pretest to the posttest. Conversely, if the number of negative ranks is greater, it indicates a decrease in scores. Meanwhile, ties indicate the number of data points that have the same value between the pretest and posttest. In the Ranks table for the Wilcoxon test, there was no decrease in scores (negative ranks = 0), while the data that increased (positive ranks) had a mean rank of 14.00 and a sum of ranks of 378.00. There was one data item with the same value on both the pretest and posttest (ties). Thus, it can be concluded that most students experienced an increase in learning outcomes from the pretest to the posttest.

Table 11. Table of test statistics pretest-posttest field test

Test Statistics^a	
	Posttest - Pretest
Z	-4.549 ^b
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Furthermore, based on the results of the Wilcoxon test in the test statistics table, the Z value was -4.549, with a significance value (Asymp. Sig. (2-tailed)) of $0.000 < 0.05$. Thus, there is a significant difference between the pretest and posttest results. This indicates that the treatment given has an effect on improving student learning outcomes. Therefore, H_0 is rejected, and H_1 is accepted.

Table 12. N-Gain pretest-posttest field test

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ngain_skor	28	.00	.87	.6417	.21068
ngain_persen	28	.00	86.96	64.1659	21.06814
Valid N (listwise)	28				

Based on the table, the N-gain test result in the field test was 0.6417. Based on the N-Gain results above, the increase in reading comprehension of explanatory texts among grade IV students at Wates 01 Elementary School is categorized as moderate, with a fairly effective level of effectiveness.

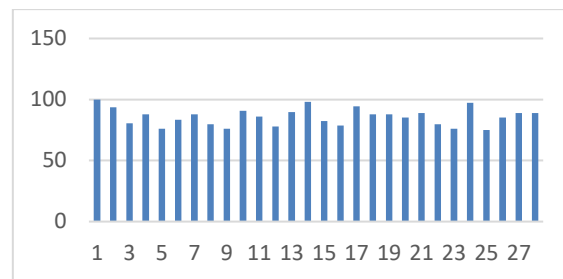


Figure 4. Results of student response questionnaire

The results of the student questionnaire after using the Fun Explanation interactive multimedia showed a positive response, with a score of 86% (very good). Although not as high as the expert validation results, this indicates that students are interested in the learning media used. The difference between validation scores and student responses may be due to factors such as user experience, individual student characteristics, and the media's ease of use.

The results showed that the Fun Explanation interactive multimedia had a very high level of feasibility, with an average validation score of 94.1%, placing it in the very feasible category. These results indicate that the developed multimedia meets the requirements of elementary school students in terms of material, language, display, and ease of use. This feasibility is supported by various multimedia features, such as learning materials, interactive quizzes, direct-response features, audio explanations, navigation animations, and the "Mrs. Aul" figure as a learning guide.

In addition to its attractive appearance, the Fun Explanation interactive multimedia is specifically designed to aid the reading comprehension process of explanatory texts. Students are not immediately given evaluation questions but are guided through a systematic reading process, beginning with reading the explanatory text, understanding the content, identifying the main idea, finding important information, and answering questions based on the text. This sequential process helps students gradually comprehend the reading, so that reading is oriented not only towards finding answers but also towards building a comprehensive understanding of the text.

The effectiveness of the Fun Explanation interactive multimedia is evident from the Wilcoxon test results, which showed a significant difference between pretest and posttest scores ($p < 0.05$). Furthermore, the N-Gain result of 0.64 is in the moderate category, with a moderate level of effectiveness. These findings indicate that the use of Fun Explanation interactive

multimedia can improve students' reading comprehension skills in explanatory texts. This improvement is evident in students' ability to comprehend the reading content, determine the main idea, identify important information, and explain cause-and-effect relationships within the explanatory text.

This improvement in reading comprehension skills can be explained through the Cognitive Theory of Multimedia Learning proposed by Mayer (2020). This theory explains that students learn more effectively when information is presented simultaneously through both visual and verbal channels. In the interactive multimedia "Fun Explanation," students not only read explanatory text but also receive support through audio, illustrations, animations, and instructional guidance that help them construct mental representations of the reading content. This makes it easier for students to grasp the concepts and information contained in the explanatory text.

Furthermore, from a constructivist perspective, the interactive multimedia "Fun Explanation" provides opportunities for students to actively construct their understanding. Through interactive quizzes and structured reading activities, students are actively involved in the learning process. The feedback provided by the multimedia helps students evaluate their understanding and correct errors throughout the learning process. This makes learning more meaningful because students play an active role in constructing knowledge from the information they obtain from the text they read.

The positive student responses toward the Fun Explanation interactive multimedia, reflected by an 86% rating in the very good category, demonstrate its potential to create an engaging learning environment. Students reported that the multimedia facilitated their understanding of the material while making the learning process more enjoyable. This suggests that the integration of interactive features, attractive visual elements, and accessible navigation can enhance learners' motivation and active participation during reading comprehension activities. These findings support previous research by Yasa et al. (2021), which highlighted the role of interactive multimedia in promoting student engagement and learning motivation. As a result, the multimedia contributed to a more meaningful and student-centered learning experience.

These findings align with those of (Amin et al., 2023), who showed that interactive multimedia can improve students' understanding of the learning material. These results also support the findings of Agustina et al. (2021), who found that interactively designed multimedia can improve student learning outcomes. In addition, research by Rindengan et al. (2025) shows that the use of multimedia in literacy learning positively influences students' reading comprehension skills.

Overall, the research results show that the interactive multimedia Fun Explanation not only meets the eligibility criteria but is also highly effective at improving elementary school students' reading comprehension of explanatory texts. This effectiveness is supported by the systematic stages of reading comprehension, the integration of various multimedia elements, and active student involvement throughout the learning process.

Conclusion

This research produces an interactive multimedia Fun Explanation, which is well-suited for teaching sixth-grade elementary school students to read and understand explanatory texts, with an average validation score of 94.1%. The implementation results show that the developed multimedia is quite effective in improving students' reading comprehension skills, indicated by a significant difference between the pretest and posttest results and an N-Gain value of 0.6417.

In addition, 86% of students' responses indicate that multimedia can increase students' interest and involvement in learning. Thus, interactive multimedia Fun Explanation can be an alternative learning medium that supports the improvement of the ability to read and understand explanatory texts in elementary schools.

References

- Agustina, H., Roesminingsih, M. V., & Jacky, M. (2021). Pengembangan Multimedia Interaktif Berbantu Articulate Storyline Untuk Meningkatkan Hasil Belajar Kognitif Siswa Pada Pelajaran IPS Di Kelas V. *Jurnal Education and development Institut Pendidikan Tapanuli Selatan*, 9(2), 567–571.
- Agustinalia, I. (2022). *Mengenal dan Memahami Jenis-jenis Teks*. Graha Printama Selaras.
- Amin, W., Mustofa, Markub, & Sun'iyah, S. L. (2023). Pengembangan Media Pembelajaran Multimedia Interaktif Berbasis Adobe Animate Untuk Keterampilan Membaca Materi Teks Eksplanasi Kelas VIII MTs. Al Karimi 1 Gresik. *Edu-Kata*, 9(1), 8–16. <https://doi.org/10.52166/kata.v9i1.4022>
- Branch, R. M. (2009). Approach, Instructional Design: The ADDIE. In *Department of Educational Psychology and Instructional Technology University of Georgia* (Vol. 53, Nomor 9).
- Edi, F. R. S. (2021). *Aplikasi SPSS Pada Statistik Non Parametrik*. CV Bintang Semesta Media.
- Fitriana, R. (2022). *Model Membaca berbasis barret taxonomi*.
- Ilma, I. (2024). Improving creative thinking skills and learning motivation through ethnomathematics-based interactive multimedia : An experimental study in primary school. *Multidiciplinary Science Journal*.
- Kemendikdasmen, B. B. (2022). *Perbaiki Pelajaran Membaca untuk meningkatkan Kompetensi Literasi Siswa*.
- Kurniawan, A. (2018). *Metodologi Penelitian Pendidikan*. PT Remaja Rosdakarya.
- Liu, Y. (2025). The Relationships Between Lower- and Higher-Level Cognitive Skills and Multimodal Reading Comprehension Among Fourth-Grade Students in the Digital Age. *International Journal of Applied Linguistics*, 509–521. <https://doi.org/10.1111/ijal.12794>
- Mayer, R. E. (2020). *Multimedia Learning Third Edition*. Cambridge University Press. <https://doi.org/https://doi.org/10.1017/9781316941355>
- Nurmandayanti, S., Sutisnawati, A., & Uswatun, D. A. (2025). Development Of E-Module Based STEM EDP On Elementary Sshool Student's Learning Process. *Jurnal Cakrawala Pendas*, 11(4), 1006–1020.
- Rindengan, M. E., Hamber, A. C. D., Mongkol, S. H., Sili, I., Robot, G., & Sulangi, G. (2025). Penerapan Media Digital Interaktif Untuk Meningkatkan Literasi Membaca Siswa SDN IV Tomohon. *Jurnal Ilmiah Pendidikan Dasar*, 5(4), 5270–5278.
- Sukarelawan, M. I., Indratno, T. K., & Ayu, S. M. (2024). *N-Gain vs Stacking: Analisis Perubahan Abilitas Peserta Didik dalam Desain One Group Pretest-Posttest*. Suryacahya.
- Surjono, H. D. (2017). *Multimedia Pembelajaran Interaktif*.

Syarah, M., Indriani, L., & Oktari, S. W. (2025). *Pengaruh penggunaan media pembelajaran multimedia interaktif terhadap hasil belajar siswa kelas V pada materi teks eksplanasi*. 588–596.

Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional (2003).

UNICEF. (2022a). *70% of 10-Years-Olds now in learning Poverty, Unable to Read and Understand a Simple Text*. <https://www.unicef.org/eap/press-releases/70-10-year-olds-now-learning-poverty-unable-read-and-understand-simple-text?utm>

UNICEF. (2022b). *78% of 10-years-olds in South Asia now in learning poverty, unable to read and understand a simple text*. <https://www.unicef.org/rosa/press-releases/78-10-year-olds-south-asia-now-learning-poverty-unable-read-and-understand-simple?utm>

Widyastuti, Sutopo, A., Widyasari, C., Rahmawati, F. P., & Minsih. (2025). *Implementasi Prinsip Pengelolaan Meaningful , Mindful , dan Joyful Learning dalam Proses Pembelajaran Mendalam : Studi Kasus di Sekolah Dasar Islam Terpadu*. 9(5), 2172–2181. <https://doi.org/10.31004/obsesi.v9i5.7339>

Yasa, I. K. D. C. A., Gede, A. A. G., & Simamora, A. H. (2021). Meningkatkan Semangat Belajar Siswa Melalui Multimedia Interaktif Pada Mata Pelajaran IPA. *Jurnal Edutech Undiksha*, 8(1), 104–112.

Zunanik, A., & Sulistyaningrum, H. (2026). Optimizing HOTS skills and learning motivation of elementary school students through science interactive multimedia based on PBL with Google Sites: a development research. *SPIE*, 14141. <https://doi.org/https://doi.org/10.1117/12.3107655>