PRIMARYEDU

Primaryedu: Journal of Elementary Education
Volume 9, Number 2, September 2025

P-ISSN: 2580-9326 | E-ISSN: 2580-7714

Problem-Based Learning and Digital Infographics as a Strategy to Improve Explanatory Text Writing in Primary Education

Putri Kusumawati[1*], Panca Dewi Purwati[2], Ellianawati Ellianawati[3], Decky Avrilianda[4]

[1,2,3,4] Universitas Negeri Semarang. Indonesia

Article Info

Article history:

Received June 6th, 2025
Revised July 23rd, 2025
Accepted September 3rd, 2025

Keywords:

Problem-based learning
Digital infographics
Writing skills
Explanatory texts
Innovative learning

Abstract

This study explores the effectiveness of integrating Problem Based Learning (PBL) with digital infographic media to improve the explanatory writing skills of grade VI students. This study employed a quasi-experimental design, in which the experimental group was instructed through PBL and infographics, whereas the control group received instruction using traditional methods.A significant improvement was observed in the experimental group compared to the control group, as indicated by the results of the pre- test and post-test scores. Problem-Based Learning (PBL) fosters students' engagement in problem-solving, while digital infographics facilitate visual comprehension of concepts and text structure. This integrated approach has been shown to enhance students' logical organization of information, systematic thinking, and critical skills. The present study posits the incorporation of digital infographics in writing instruction, the extension of PBL to foster collaboration, and the undertaking of further research to explore various digital media or innovative strategies that could enhance students' competencies in areas such as oral communication and analytical reasoning.

Corresponding Author:

Putri Kusumawati
Universitas Negeri Semarang. Indonesia
Email Author: putri_kusuma@students.unnes.ac.id

INTRODUCTION

In an era known as the era of educational expansion, there is an increasing demand to improve the quality of learning, especially with regard to students' language proficiency. The acquisition of writing skills is of paramount importance, ideally initiated during the early stages of education. These skills form the foundation for various disciplines, including the arts, humanities, and scientific fields. This is in accordance with the emphasis in the Kurikulum Merdeka, which designates literary and writing skills as a component of the fundamental competencies to be cultivated from the elementary education level onward (Kemendikbudristek, 2022). It reflects language proficiency and is linked to cognitive development, reasoning ability, and communication skills. At the primary school level, writing is an important foundation for

developing cognitive skills and articulating ideas in a coherent way. By the end of primary school, students should have developed proficiency in writing explanatory texts. This pedagogical method requires students to develop a deep understanding of the subject matter and demonstrate the ability to articulate their thoughts in a methodically structured, clear, and coherent manner. They tend not to convey ideas systematically and lack training in linking information based on the cause-and-effect relationship that characterizes the explanatory text. According to (Agustin et al., 2025; Sari et al., 2020), these difficulties are influenced by various factors, both internal and external. Internal factors include low reading interest and students' understanding of text structure, while external factors include limited learning media and lack of innovative teaching strategies. (Lawatri & Indihadi, 2021) revealed that most students have not been able to write explanatory texts with a complete structure and neat writing. (Chikmah et al., 2024) also asserted that many students have difficulty finding the main idea and elaborating the cause-and-effect relationship, which is the core of the explanatory text.

A particularly efficacious approach for the cultivation of students' writing skills, particularly in the domain of text explication, is the Model of Problem-Based Learning (PBL). The model has been designed to motivate students to engage in active learning, which involves the identification and resolution of real-world problems through critical thinking. In the context of language instruction, PBL has been demonstrated to be an effective method for developing critical thinking skills, which are paramount in composition. Students learn to analyze information, formulate arguments, and communicate ideas in a logical and structured manner.

Research indicates that activities such as research projects, class discussions, and debates within a Problem-Based Learning (PBL) model provide students with the opportunity to engage in comprehensive thinking and articulate their ideas in a methodical manner (Tampubolon et al., 2024). Therefore, PBL is an appropriate approach for assessing the quality of scientific writing, particularly in the context of composing coherent and comprehensive text explanations. This model is oriented towards solving real problems, and students are actively involved in the process of identifying, analyzing, and solving a problem. PBL not only provides space for students to learn independently and collaboratively, but also encourages the development of critical thinking, analytical, and communicative skills, all of which are everyday skills that students can more easily express in a logical and structured manner. Although the PBL model has been widely applied at various levels of education, its application in the context of learning to write in grade 6, especially on explanatory text material, has not received optimal attention. A significant number of educators prioritize conventional pedagogical approaches that emphasize the memorization of textual structures, thereby neglecting to provide students with the opportunity to engage with the substance of writing through experiential learning or problem-solving in a contextual setting. Indeed, the acquisition of writing skills necessitates an approach that fosters motivation, emotional engagement, and connections to students' personal experiences, thereby enriching their writing with vitality and significance. In this context, PBL plays a pivotal role as a methodology that has the capacity to address these needs. Many teachers focus on conventional methods that emphasize memorizing text structures without allowing students to explore writing content through real-life experiences or contextual problem-solving. Learning to write requires an approach that can motivate students, engage their emotions, and connect them to their personal experiences, making their writing livelier and meaningful.

The Problem-Based Learning (PBL) model is relevant to 21st-century learning because it supports the development of the 4Cs: Critical Thinking, Communication, Collaboration, and Creativity. The cultivation of these skills should begin in elementary school, with teachers playing a key role in their integration through context-appropriate innovations (Widodo & Wardani, 2020). In line with this, the use of interactive multimedia has been proven to significantly enhance students' cognitive abilities, accompanied by positive responses to the learning process (Oktariani et al., 2025).

In the context of learning to write, these four skills are essential for the application of PBL to facilitate not only the improvement of students' writing ability but also their preparation to face complex and dynamic future challenges. he further posits that the integration of digital infographic media, leveraging contemporary technological advancements, is garnering increased attention within educational settings. Conversely, the integration of digital infographic media, which employs contemporary technological advancements, has garnered increased attention within educational settings. Digital infographics have the capacity to present information in a visual and structured manner, thereby helping students to maximize their potential in organizing ideas and mastering concepts more comprehensively. This technology has been demonstrated to package information in an interesting and easily comprehensible manner, with the potential to enhance students' writing skills, particularly in the composition of systematic and logical explanatory texts. Nevertheless, the application of digital infographics in learning activities to write explanatory texts at the primary school level requires further optimization.

In recent years, there has been an increasing focus on developments in writing instruction at the primary school level, particularly with regard to enhancing students' ability to compose explanatory texts. Problem-based approaches, such as Problem Based Learning, have been demonstrated to have a favorable impact on students' writing skills. PBL has been demonstrated to promote students' identification of real-world problems and their subsequent resolution through research and group discussions. These activities have been shown to enhance students' critical thinking skills and writing abilities. (Pinastiti et al., 2020) revealed that the application of Problem-Based Learning (PBL) was successful in improving the quality of the learning process of writing explanatory texts. Furthermore, (Sari et al., 2023) demonstrated the efficacy of digital infographics in enhancing students' comprehension of subject matter. These tools have been shown to engender an engaging learning environment and motivate students, thereby facilitating their understanding of theory and writing practice. The utilization of infographics has been demonstrated to facilitate students in the development of a more organized, lucid, and captivating explanatory text. This technology enables students to visualize the relationships between concepts and information that support their writing skills. However, extant research demonstrates the efficacy of each of these approaches; nevertheless, the combination of PBL and digital infographic media in learning to write explanatory texts in elementary school has not been the focus of extensive research.

The paucity of research in this area concerns the limited number of studies that integrate PBL with the use of technology using digital infographic media in the learning process in writing explanatory texts, especially at the elementary school level. Nurhayati et al., (2021) revealed that the implementation of PBL in learning to write explanatory texts can develop students' ability to think critically, encourage students to discuss and analyze material, and increase students' understanding and participation. Tanjung & Lubis, (2024) revealed that the use of infographics

facilitates students' comprehension of the material and stimulates their interest in learning, thereby enhancing the efficacy of the learning process and contributing to the development of students' writing skills. The extant research indicates that both approaches are effective in improving writing and critical thinking skills when utilized separately. However, there is a paucity of research on the efficacy of combining these two approaches. This creates a gap in the literature that must be filled to develop a more integrative and effective learning model at the elementary level. This research will contribute to the advancement in the development of educational science that offers a holistic approach to writing learning, where the two methods complement each other. This pedagogical approach is expected to enhance students' explanatory text writing skills in a more thorough, interesting, and applicable manner. Moreover, it is anticipated that this research will serve as a valuable reference for the development of effective teaching strategies and the improvement of elementary curriculum.

The objective of this study is to assess the efficacy of integrating the Problem Based Learning model with digital infographic media in enhancing students' capabilities to compose explanatory texts. The central problem to be addressed in this study is the following: What is the impact of Problem Based Learning, supported by digital infographic media, on students' ability to write explanatory texts in grade 6?

1. **The implementation of Problem-Based Learning (PBL) in the context of literacy and writing is a subject that merits close examination**

The Problem-Based Learning (PBL) model is a constructivist approach that places students at the center of learning, with an emphasis on solving real and contextual problems. In this model, educators function as facilitators, guiding students through the process of critical thinking, active analysis, and problem solving to develop solutions to the challenges they encounter. This pedagogical approach has the potential to increase students' interest and motivation to learn, as the material becomes more meaningful and relevant to their daily lives (Djonomiarjo, 2019). This assertion is further substantiated by the observation that PBL fosters positive student engagement in comprehending learning materials (Ariyani & Prasetyo, 2021).

2. **The utilization of digital infographics as a medium to facilitate literacy and writing skills in an academic setting is a subject that merits further investigation**

The academic environment is a subject that merits further research. Visual media, particularly digital infographics, plays an instrumental role in enhancing the efficacy of the learning process. The integration of digital media can facilitate the understanding of abstract concepts through attractive and accessible visualizations (Amin, 2021). In the context of learning to write, infographics facilitate students' comprehension of text structure and support the logical integration of ideas. Digital infographics present a more engaging alternative to conventional learning media, such as newspapers or magazines, which has been demonstrated to increase student engagement and understanding (Sari et al., 2023).

The selection of media and teaching materials in elementary schools must be planned in accordance with learning objectives, student characteristics, learning styles, teacher abilities, and existing environmental conditions and facilities. The integration of technology in contemporary learning environments is imperative to enhance efficacy and engender a more engaging educational experience (Purwati, 2024). Digital infographics have been identified as a catalyst in

the development of digital literacy skills, which are an important part of 21st-century competencies. The integration of visual media in educational settings has been demonstrated to foster students' collaborative, critical thinking, communication, and creativity skills (Utaminingsih, Ellianawati, et al., 2023). Indeed, the cultivation of robust digital literacy competencies endows students with the instruments necessary to traverse the epoch of Society 5.0 while upholding the fundamental principles of education (Utaminingsih, Puspita, et al., 2023).

Conversely, visual media, such as images and infographics, have been demonstrated to stimulate imagination and facilitate the development of writing ideas, particularly within the expressive writing process (Ermiyanti et al., 2022). Consequently, the integration of Problem-Based Learning (PBL) with digital infographic media emerges as a relevant and promising learning strategy to improve students' ability to compose explanatory texts.

3. The present study explores the integration of Problem-Based Learning (PBL) and digital infographics in the context of writing instruction

The integration of Problem-Based Learning (PBL) with digital infographic media has emerged as a predominant theme in numerous contemporary studies. The combination of these two elements is believed to create a more interactive, immersive, and meaningful learning environment. The integration of Problem-Based Learning (PBL) with visual media has been demonstrated to enhance the connection between conceptual knowledge, practical competence, and self-directed learning (Aryana, 2022).

The efficacy of PBL is further enhanced through the use of interesting and technologically relevant learning media. Digital infographics, defined as interactive visual media, have been shown to facilitate the delivery of information in a concise and interesting manner, thereby enabling students to better understand the structure and content of explanatory texts. This pedagogical approach fosters a more conducive learning environment, as asserted by (Muharam & Sobri, 2021). The integration of a dynamic learning approach enhances the relevance of the material to contemporary technological advancements, thereby promoting a more engaging and effective educational experience. Conversely, the integration of interactive learning multimedia has been demonstrated to enhance students' enthusiasm for learning. Media such as infographics have been shown to convey material in a more engaging and entertaining manner, which in turn has a positive impact on the achievement of student learning outcomes (Budiarto & Jazuli, 2021).

Digital infographics have also been demonstrated to contribute to the development of students' digital literacy. This visual medium presents information in an interesting and effective manner, encouraging increased engagement in the learning process (Munaris et al., 2021). Furthermore, the utilization of Canva as a digital infographic design instrument has been demonstrated to enhance student learning outcomes, as evidenced by the increase in average scores and the attainment of classical completeness in each learning cycle (Mala et al., 2023).

4. The present study will examine the impact of Problem-Based Learning (PBL) and digital media on student engagement and learning outcomes

The Problem-Based Learning (PBL) model prioritizes the learning process over the final outcome. Assessment is conducted not solely through examinations, but also through the evaluation of student work, which is collectively discussed and analyzed (Saputra, 2020).

Activities that incorporate listening, observing, discussing, and retelling information have been demonstrated to be more efficacious in fostering comprehension (Silberman in Munaris et al., 2021). Infographics, for instance, are a medium that lends itself to the effective presentation of information in a visually appealing and engaging manner. Digital media designed according to technology and student characteristics has also been demonstrated to increase student engagement and understanding of the material (Zahwa & Syafi'i, 2022). Furthermore, the integration of PBL with digital media has been demonstrated to foster critical thinking, collaboration, and enhanced learning outcomes (Ramli et al., 2025).

5. In the contemporary era, characterized by the advent of Society 5.0, the notion of 21st-century learning emerges as a pivotal concept, underscoring the need for adaptability and resilience in the face of evolving societal demands

In the contemporary educational environment, learning is essential to equip students with critical thinking, problem solving, communication, collaboration, and digital literacy skills. The necessity of adapting language learning to the demands of Society 5.0 by integrating new literacies and 21st century skills has been emphasized in various studies (Mansyur et al., 2022). The Problem Based Learning (PBL) model has been demonstrated to have a substantial effect on the development of scientific writing skills and the enhancement of problem-solving abilities (Sari et al., 2021). This finding is further substantiated by research indicating a substantial enhancement in critical thinking skills through the integration of PBL and the Higher Order Thinking Skills (HOTS) approach (Radiansyah et al., 2023).

The efficacy of PBL implementation is substantiated by research indicating that its success is contingent on educators' comprehension of the method and positive learning interactions between teachers and students (Susilawati & Supriyatno, 2023). Concomitant with technological advances, future research endeavors must encompass the examination of technologies such as virtual reality (VR) and augmented reality (AR), in addition to the potential of infographics within the cultural and socio-economic context of educational settings (Bhat & Alyahya, 2024).

METHOD

The present study employs a quasi-experimental methodology, utilizing a non-equivalent control group design. The study was meticulously divided into two groups: an experimental group that received the intervention of Problem-Based Learning (PBL), assisted by digital infographic media, and a control group that received the conventional method of instruction. The objective of this study is to examine the impact of implementing a PBL approach supported by digital infographics on the students' ability to compose text explanations. The research population comprises students from classes 6A and 6B at one of the elementary schools in Karawang, with each class consisting of 30 students. Purposive sampling is a technique that is employed with the objective of ensuring that the sample population is representative of the target population in terms of both the demographic composition and the distribution of characteristics. The investigation commenced with a pre-test to ascertain the initial capacity, which was subsequently utilized to formulate the explanatory text in both the second and third sections. Subsequently, the experimental group was provided with instructions utilizing a Problem-Based Learning (PBL) approach, complemented by digital infographics. In contrast, the control group adhered to

conventional instructional methods. Following the intervention, the post-test was administered to both subjects to evaluate their writing proficiency.

A study of research instruments and assessment techniques is warranted. The research instrument employed in this study is a performance test for writing explanatory texts. The objective of this evaluation instrument is to assess students' aptitude in producing explanations of scientific processes or social phenomena, adhering to the prescribed text structures outlined in the Merdeka Curriculum for Phase C Primary Schools. The experiment was administered in two stages. Initially, a pre-test (also known as a "pretest") was conducted prior to the administration of the treatment. Subsequently, a post-test (also known as a "posttest") was conducted following the implementation of the learning intervention for both the experimental and control groups.

In the test, learners were tasked with producing an explanatory text with a length between 150 and 200 words. The written work should contain a complete text structure, namely a general statement as an introduction to the topic, an explanatory sequence containing the process or cause-and-effect that explains the phenomenon, and an interpretation or conclusion section if deemed necessary. The test's topics are selected to be contextual and relevant to learners' experiences, including the process of rain, the formation of a rainbow, and the impact of a flood.

The evaluation of the test results was conducted using an analytical scoring rubric that encompasses five primary domains. The initial facet under consideration is text structure, which evaluates the completeness and accuracy of the arrangement of the components of the explanatory text. The second aspect pertains to the coherence and cohesion of paragraphs, which reflect the integration between sentences and between paragraphs, ensuring that the text reads logically and systematically. The third aspect pertains to the utilization of linguistic rules, encompassing students' aptitude in employing passive sentences, cause-and-effect conjunctions, and scientific terminology in a suitable manner. The fourth aspect pertains to the accuracy of the content and information, which involves assessing the relevance of the text content to the designated topic and the accuracy of the data or information conveyed. The fifth aspect pertains to the utilization of spelling and punctuation in accordance with established Indonesian language conventions.

The assessment is meticulously structured, with each component assigned a distinct score weighting. The components and their respective score weights are as follows: text structure (maximum weighting of 25 points); paragraph coherence and cohesion (20 points each); linguistic rules (20 points); accuracy of content and information (20 points); and creativity and appeal (15 points). Consequently, the maximum attainable score on a given test is 100 points.

The final scores of students are converted into qualitative categories based on the Minimum Completion Criteria of 70. In accordance with the established criteria, students who achieve a score of at least 70 are designated as complete, while those who score below 70 are classified as incomplete. The following categories will be used to assign points: The evaluation scale employed in this study ranged from "Excellent" (86-100), "Good" (76-85), "Fair" (70-75), to "Poor" (below 70).

The assessment process was conducted in collaboration with the classroom teacher to ensure the objectivity, validity, and reliability of the data. The rubric employed in this study was developed in accordance with the indicators of explanatory text writing skills delineated in the Stage C Indonesian language learning outcomes. This rubric underwent a validation process by primary school language learning experts.

RESULTS AND DISCUSSION

Results

The assessment of explanatory text writing skills in this study refers to five main indicators: text structure, coherence and cohesion, linguistics, depth and relevance of content, and creativity and attractiveness of presentation. These indicators are adapted from research by (Hairunisa et al., 2022; Junia Deswita et al., 2025), which emphasizes the importance of integrating content and form elements in explanatory writing. Explanatory Text Assessment Indicators.

1) Text Structure: The logical structure of the text, consisting of a general statement, a series of explanations, and a final interpretation.
2) Coherence and Cohesion: The coherence between sentences and paragraphs.
3) Language: The accuracy of vocabulary, sentence structure, spelling, and punctuation.
4) Writing Content: The relevance and depth of discussion to the topic being explained.
5) Creativity and Attractiveness: Interesting, communicative, and innovative presentation.

These five indicators serve as the basis for assessing students' writing skills, both in the experimental and control groups. These five indicators serve as the basis for assessing students' writing skills, both in the experimental and control groups. The results obtained through research are presented in tabular form to illustrate the development of understanding of explanatory text before and after the application of Problem- Based Learning (PBL) with digital infographic media. The development of understanding of explanatory text can be seen in the table presented below images.

Table 1. Mean Scores of Pretest and Posttest

Group	Number of Students	Mean Pretest Score	Mean Posttest Score
Experimental (PBL +Infographic)	30	65,20	83,40
Control (Conventional Method)	30	64,80	72,10

As shown in Table 1, the mean scores on the pretest and posttest for the two groups are presented. The experimental group (Problem-Based Learning with digital infographics) demonstrated a significant increase in their mean score, rising from 65.20 to 83.40. In contrast, the control group, which employed the conventional method, exhibited a modest rise in their mean score, from 64.80 to 72.10. This finding indicates that the two groups exhibited a significant increase in their learning outcomes, particularly in the experimental group.

Table 2. Mean Gain Score (Posttest-Pretest)

Group	Mean Pretest Score	Mean Posttest Score	Gain Score	Description
Experimental	65,20	83,40	18,20	High improvement
Control	64,80	72,10	7,30	Moderate improvement

As shown in Table 2, the mean gain score (the difference between the posttest and the pretest scores) for the experimental group was 18.20 (a substantial increase), while for the control group, it was 7.30 (a moderate increase). This finding indicates that the implementation of digital infographics in educational settings is a more effective approach for students to compose text explanations when compared with conventional methods.

The present study underscores the efficacy of integrating Problem-Based Learning (PBL) with digital infographics in fostering students' writing abilities. The Problem-Based Learning (PBL) approach enables students to engage in critical thinking and compose texts grounded in a profound understanding of the subject matter. Digital infographics play a pivotal role in facilitating comprehension of intricate information, effectively capturing the viewer's attention. The integration of these two approaches results in a more substantial increase in the written text's content in the context of explanatory texts, as evidenced by the findings presented in Table 3, in comparison to conventional methods.

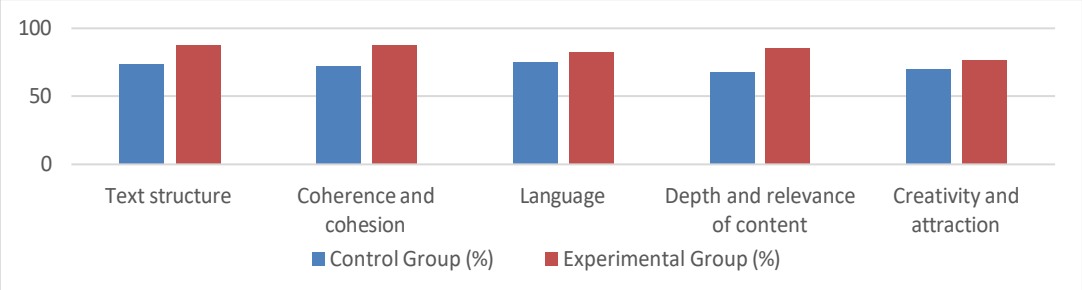

Figure 1. Percentage of Completion Writing Indicator

The findings of this study indicated a substantial enhancement in the students' proficiency in composing explanatory texts following the integration of the Problem Based Learning (PBL) learning model with digital infographic media, particularly among the experimental group. A thorough examination of the data reveals that each component of writing proficiency has shown marked enhancement in the experimental group. This discrepancy is indicative of the problem-based PBL approach's efficacy in cultivating students' coherent, critical, and creative thinking skills in the composition of explanatory texts. Digital infographics serve to enhance comprehension and fortify the interconnections between ideas within a text.

An Examination of Variations in Writing Quality in Relation to Writing Ability Indicators

The quality of students' writing was examined by analyzing the average achievement on the five main indicators of the ability to write explanatory texts, both in the experimental and control groups. The objective of this evaluation is to ascertain the specific impact of the learning approach on each indicator, as well as to identify the aspects that have demonstrated the most significant improvements.

1. Text Structure

The text's structure mirrors students' aptitude for methodically arranging explanatory texts, commencing with overarching statements, followed by a succession of elucidations, culminating in conclusions. The experimental group demonstrated an achievement percentage of 88%, while the control group attained a percentage of 74%. The 14% discrepancy indicates that the Problem-Based Learning (PBL) approach, facilitated by digital infographic media, facilitates students' comprehension and application of the appropriate and exhaustive text structure.

2. The present study will examine the concepts of coherence and cohesion.

This indicator encompasses two aspects: the integration of sentences, or coherence, and the attachment of sentences or paragraphs through the use of conjunctions or references, which is referred to as cohesion. The experimental group demonstrated a success rate of 87.5%, while the control group attained 72.5%. This discrepancy suggests that problem-based learning fosters students' ability to organize ideas logically and enhance the coherence of their writing by establishing more effective connections between ideas.

3. The following language rules are to be observed

The rules of language usage encompass aspects such as the appropriate selection of vocabulary, the structure of sentences, spelling, and the use of punctuation. The experimental group obtained an average score of 82.5%, which is higher than the 75% obtained by the control group. While the discrepancy may not be as pronounced as in other indicators, this augmentation nevertheless mirrors the efficacy of the pedagogical approach in enhancing students' cognizance and precision concerning the mechanical intricacies of written language.

4. An examination of the depth and relevance of content is warranted

This indicator is designed to assess students' ability to convey relevant and in-depth information according to the topic of the explanation. The experimental group demonstrated an achievement rate of 85%, while the control group attained a rate of 67.5%. This discrepancy is indicative of a significant disparity between indicators, thereby substantiating the efficacy of infographics in problem-based learning. The utilization of infographics has been shown to enhance students' comprehension of the subject matter, consequently leading to more informative and substantial written compositions.

5. Creativity and Attraction

The final aspect of the rubric evaluates students' ability to present their writing in a manner that is both engaging and communicative. The experimental group demonstrated an achievement rate of 76.7%, while the control group exhibited a rate of 70%. Despite its relative paucity in terms of weight, this enhancement remains significant as it signifies that the students in the experimental group tend to present the text in a more varied, visual, and communicative manner. In accordance with Torrance's (1966) framework, creativity was analyzed through four indicators: fluency, flexibility, originality, and elaboration. The integration of digital infographics within educational environments has been demonstrated to provide a visual stimulus that has been shown to enhance imagination and encourage variation in sentence structure, the use of analogies, and more expressive articulation of ideas. Consequently, students have the capacity to compose texts that are informative and original, incorporating novel ideas that are contextualized. These findings corroborate the efficacy of the digital infographic-based PBL approach in fostering more innovative and comprehensive writing skills.

An Analysis of Changes in the Quality of Students' Writing, Both "Before and After" the Implementation of a New Writing Program

An analysis of student writing samples indicates that prior to the implementation of the treatment (pre-test), the majority of students lacked the ability to compose an explanatory text with the appropriate structural elements. A significant number of writings did not include general statements in a clear manner, cause-and-effect explanations were not systematic, and the use of language was still inappropriate (e.g., a mixture of narrative and explanatory). Following the

integration of the PBL model with digital infographics, students exhibited an increased tendency towards structured writing, progressing from a general statement, a series of explanations, and an appropriate final interpretation. Furthermore, an enhancement in the coherence between paragraphs, the employment of causal and chronological conjunctions, and an augmentation in the utilization of technical terms pertinent to the subject matter under discussion was observed. For instance, prior to the treatment, one of the students wrote: "The flood was precipitated by the rain. The presence of a substantial quantity of water on the road is a notable phenomenon. The presence of both cars and motorcycles on the road is a contributing factor to the congestion." In the aftermath of the treatment, the same student articulated the following: "Flooding constitutes a natural disaster precipitated by heavy rainfall, the capacity of which waterways are incapable of accommodating. In instances of water overflows, the streets become inundated, thereby disrupting the daily activities of the populace. Consequently, the implementation of a robust drainage system is imperative to mitigate the risk of flooding.The writing demonstrated an enhancement in vocabulary, accurate explanatory structure, and cohesive sentence connections.

The Present Study Will Examine the Efficacy of the PBL Model When Utilized in Conjunction with Digital Infographics

The PBL approach fosters students' identification of authentic problems, group discussions, and the creation of infographics, culminating in the composition of explanatory texts grounded in profound understanding. Digital infographics have been shown to facilitate the comprehension of complex information by students by presenting it in a visual format that is easily digestible. These tools have been demonstrated to assist students in developing a visual understanding of the relationships between different concepts. The efficacy of this visualization technique in facilitating the development of coherent and engaging writing ideas has been empirically substantiated.

The combination of these two elements fosters an active, in-depth, and meaningful learning experience. The substantial enhancement in learning outcomes observed in the experimental group serves as compelling evidence that the integration of the Problem Based Learning approach and digital visual media can remarkably fortify students' explanatory text writing skills. The findings indicate that the PBL model, augmented by digital infographics, is not only efficacious in enhancing the technical dimensions of writing proficiency but also in fostering students' critical, creative, and communicative thinking skills in the composition of explanatory texts.

The ability to write explanatory texts in elementary school students requires skills in finding, developing, and conveying factual information in a logical and systematic manner. The implementation of the PBL model has been demonstrated to result in substantial enhancement in the domain of writing explanatory texts when compared with conventional learning methodologies. PBL has been shown to foster students' activeness, creativity, communication, and collaboration, and to demonstrate a robust correlation between knowledge, skills, and learning independence in the writing process (Aryana, 2022). Problem-based learning models have been shown to enhance student interest in learning and promote active engagement in comprehending and articulating information, including in written form (Bawamenewi et al., 2024).

In the context of 21st-century learning and the implementation of the Merdeka Curriculum, the integration of digital media, such as infographics, is highly pertinent. Digital infographics are a type of visual media that integrate text and image elements to convey information in a concise

and engaging manner. Digital learning media has been demonstrated to enhance the quality of the learning process in a manner that is adaptable to individual learners' needs. However, it is important to note that technical challenges persist in certain fundamental education units, as evidenced by A'yun et al., (2024). The utilization of genre-based teaching materials that are pertinent to students' circumstances has been demonstrated to be conducive to enhancing their capacity to compose explanatory texts. Consequently, digital media can be regarded as an efficacious strategy within the primary school setting (Cornelia et al., 2023). The following section will address the usage of the aforementioned concept.

Discussion

The findings indicate that the PBL model, augmented by digital infographics, is not only efficacious in enhancing the technical dimensions of writing proficiency but also in fostering students' critical, creative, and communicative thinking skills in the composition of explanatory texts. This finding lends further credence to the notion that problem-based learning strategies and the use of information visualization can facilitate a more profound and comprehensive comprehension of explanatory texts. This research corroborates earlier findings that the incorporation of multimedia in PBL learning is also demonstrated to enhance the efficacy of the model. The integration of digital media has been demonstrated to enhance critical thinking, communication, and collaboration skills among students, thereby facilitating their active engagement in a more meaningful learning process (Dini et al., 2024). Multimedia has been demonstrated to provide a visual and interactive experience that has the potential to strengthen understanding and make learning more contextualized.

Moreover, the results of this study align with the conclusions of Hutagaol et al., (2025), which asserts the efficacy of the problem-based approach, known as PBL, in enhancing problem-solving abilities and students' critical and creative reasoning skills. This model has demonstrated its efficacy in promoting flexibility, enabling its application in isolation or in conjunction with other learning methodologies while consistently yielding substantial learning outcomes. The findings of this study offer significant implications for the development of 21st- century learning models, particularly those that prioritize the integration of technology and the cultivation of critical thinking skills. This finding aligns with the conclusions of Realitawati et al., (2024), who posited that the application of 4C skills must be consistent and uninterrupted within the context of basic education. This approach is predicated on the notion that students must be afforded the opportunity to master these skills in a profound manner, thereby ensuring their ability to apply them in authentic real-life scenarios. The implementation of a multimedia-based PBL model fosters collaborative, creative, and contextual learning. This finding suggests the presence of opportunities for further studies, particularly in the realm of exploring the application of technology-based PBL models in other language skills, such as listening and speaking, as well as across diverse levels of education.

CONCLUSION

The present study reveals that the implementation of the Problem Based Learning model combined with digital infographic media has a positive impact on students' ability to write, especially explanatory texts. This impact is especially pronounced among sixth-grade students at SDN Tanjungpura VI, Karawang Regency. This pedagogical strategy resulted in a substantial enhancement in the students' writing proficiency, as evidenced by the substantial improvement in their scores on the post-test in comparison to the pre-test. The implementation of a problem-based approach (PBL) coupled with visual media that facilitates comprehension proved effective in

improving students' understanding of the structure of an explanatory text and their ability to organize information logically. This research makes an important contribution to education, especially in the use of technology as a tool to enrich learning experiences and help students develop critical thinking skills as well as writing skills. The findings of this study corroborate the significance of actively engaging students in the learning process and providing them with opportunities to learn through solving real problems supported by interesting and easily comprehensible media. Based on these findings, educators are advised to utilize digital infographic media in the learning process, especially in writing learning. The use of infographics not only clarifies difficult concepts, but can also increase student enthusiasm and participation in learning activities. Furthermore, to deepen student understanding, it is recommended that the PBL approach be applied more intensively in the classroom environment, with an emphasis on collaboration between students to solve problems together to help hone students' critical thinking and creativity. Future researchers can further explore the application of other digital media in various learning contexts, or try an approach that combines several innovative learning models to see its impact on the development of other skills such as speaking or analytical thinking skills. As a next step, schools can also provide training for teachers to improve their ability to utilize technology in learning to enrich existing teaching methods words.

REFERENCES

Agustin, E., Daeli, K. A. P., & Julianto, I. R. (2025). Strategi Guru dalam Memaksimalkan Pembelajaran Menulis Teks Eksplanasi di Sekolah Dasar. *Jurnal Cahaya Edukasia*, *3*(1), 54-58. https://jurnalcahayaedukasi.com/index.php/jce/article/view/21/16

Amin, R. A. K. Al. (2021). Peningkatan Keterampilan Menulis Teks Eksplanasi dengan Menggunakan Media Video Pada Siswa Kelas V Sekolah Dasar. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*, *9*(1), 386–392. https://doi.org/https://doi.org/10.20961/jkc.v9i1.53858

Ariyani, O. W., & Prasetyo, T. (2021). Efektivitas Model Pembelajaran Problem Based Learning dan Problem Solving terhadap Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Basicedu*, *5*(3), 1149–1160. https://doi.org/https://doi.org/10.31004/basicedu.v5i3.892

Aryana, S. (2022). The Effect of Problem Based Learning Model in Writing Explanation Text. *JDIL Journal of Diversity in Learning*, *2*(1), 185–193.

A'yun, N., Afifah, N. U., Wardani, S., Widiarti, N., Purwati, P. D., & Widiyatmoko, A. (2024). *Optimalisasi kurikulum merdeka: peran media pembelajaran digital pada pendidikan sekolah dasar*. *09*(02), 6367–6378.

Bawamenewi, A., Lase, J. H., Zega, E. F., & Gea, L. I. (2024). The Use of Audio-Visual Media on Student Learning Interest in Explanatory Text Material. *International Journal of Language and Ubiquitous Learning*, *2*(2), 200–207. https://doi.org/10.70177/ijlul.v2i2.1101

Bhat, S. A., & Alyahya, S. (2024). Infographics in Educational Settings: A Literature Review. *IEEE Access*, *12*(November 2023), 1633–1649. https://doi.org/10.1109/ACCESS.2023.3348083

Budiarto, F., & Jazuli, A. (2021). *Interactive Learning Multimedia Improving Learning Motivation Elementary School Students*. 1–7. https://doi.org/10.4108/eai.19-7-2021.2312497

Chikmah, L., Chandra, N., Utami, M., & Akbar, Z. (2024). *Systematic Review: Pembelajaran Kolaboratif Teknik Brainwriting untuk Peningkatan Keterampilan Menulis Teks Eksplanasi pada Pembelajaran Bahasa Indonesia di Sekolah Dasar*. *13*(001), 1119–1132. https://doi.org/https://doi.org/10.58230/27454312.1430

Cornelia, C., Ikhsanudin, I., Surmiyati, S., Apriliaswati, R., & Rezeki, Y. S. (2023). Designing Supplementary Materials for Teaching-Learning of Writing Explanatory Text Based on a Genre-Based Approach. *Premise: Journal of English Education*, *12*(1), 235–255. https://doi.org/10.24127/pj.v12i1.6141

Dini, M., Deviyanti, I., & Nasaruddin, N. (2024). Peningkatan kemampuan berpikir kritis, komunikasi, dan kolaborasi melalui penerapan model pbl berbantuan multimedia pada pembelajaran bahasa indonesia smkn 2 gowa. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang 10*(04), 231–243. https://doi.org/https://doi.org/10.36989/didaktik.v10i04.4408

Djonomiarjo, T. (2019). Pengaruh Model Problem Based Learning Terhadap Hasil Belajar. *Jurnal Ilmu Pendidikan Nonformal Aksara*, *05*(01), 39–46. https://doi.org/http://dx.doi.org/10.37905/aksara.5.1.39-46.2019

Ermiyanti, E., Irawati, L. & Setiyadi, D. (2022). Penerapan model mind mapping dengan media gambar untuk pembelajaran menulis teks eksplanasi peserta didik Kelas VI SDN Bendo 1 Kecamatan Padas …. *Wewarah: Jurnal Pendidikan Multidisipliner*, *1*(3), 251–266. http://e-journal.unipma.ac.id/index.php/WEWARAH/article/view/14060%0Ahttp://e-journal.unipma.ac.id/index.php/WEWARAH/article/download/14060/4595

Hairunisa, A., Dedi, F. S. O., & Anggraini, N. (2022). Kemampuan Menulis Teks Eksplanasi Pada Siswa Kelas XI IPS SMA Negeri 7 Bandar Lampung Tahun Pelajaran 2021/2022. *Warahan: Jurnal Ilmiah*, *4*, 1–10. https://www.stkippgribl.ac.id/eskripsi/index.php/warahan/article/view/241%0Ahttps://www.stkippgribl.ac.id/eskripsi/index.php/warahan/article/download/241/189

Hutagaol, K. R. M., Raharjo, T., Handoyo, E., Subali, B., & Avrilianda, D. (2025). Studi literatur: implementasi model problem based learning untuk meningkatkan kemampuan pemecahan masalah matematika siswa sekolah dasar. *Journal Sekolah PGSD FIP UNIMED*, *9*, 220–230.

Junia Deswita, F., Chandra, & Kharisma, I. (2025). Analisis Keterampilan Menulis Teks Eksplanasi Siswa Kelas V SDN 32 Sungai Jaring. *Jurnal QOSIM Jurnal Pendidikan Sosial & Humaniora*, *3*(2), 875–881. https://doi.org/10.61104/jq.v3i2.1043

Lawatri, V. W., & Indihadi, D. (2021). Analisis Tulisan Teks Eksplanasi Peserta Didik Kelas V Sekolah Dasar. *PEDADIDAKTIKA: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, *8*(4), 946–953. https://doi.org/10.17509/pedadidaktika.v8i4.41817

Mala, N. N., Martono, B., & Mardiana, N. (2023). Penggunaan Media Infografis Digital Berbasis Aplikasi Canva Sebagai Peningkat Hasil Belajar Siswa dalam Pembelajaran Teks Anekdot. *Metafora: Jurnal Pembelajaran Bahasa Dan Sastra*, *10*(2), 101–108. https://doi.org/10.30595/mtf.v10i2.18639

Mansyur, F. A., Arsad, A., Suherman, L. O. A., Himah, I., Zaka, I., Zilani, Z., & Syarifuddin, I. (2022). Languange Learning Adapatation Model in The Era of Society 5.0. *ELS Journal on Interdisciplinary Studies in Humanities*, *5*(4), 686–693. https://doi.org/10.34050/elsjish.v5i4.21499

Muharam, S., & Sobri, A. Y. (2021). Make Learning Fun sebagai Upaya Mahasiswa Kampus Mengajar dalam Pengelolaan Kelas Inovatif. *SCHOLARIA: Jurnal Pendidikan dan Kebudayaan, 15(1),* 33–46. https://doi.org/10.24246/j.js.2025.v15.i1.p33-46

Munaris, M., Prasetyo, H., & Putri, A. S. (2021). Infografis Bagi Guru Mata Pelajaran Bahasa Indonesia Di Bandar Lampung. *Griya Cendikia*, *6*(2), 378–383. https://doi.org/10.47637/griya-cendikia.v6i2.202

Nurhayati, Mardiana, N., & Rianti. (2021). Penerapan Model Pembelajaran Berbasis Masalah Problem Based Learning (Pbl) Pada Pelajaran Bahasa Indonesia Guna Meningkatkan Terampil Membaca Dan Menulis Lanjut Di Kelas IV Sekolah Dasar. *Jurnal Pendidikan Dasar Setia Budhi*, *4*(2), 88–95. https://stkipsetiabudhi.e-journal.id/jpd

Purwati, P. D. (2024). *Buku Ajar Mata Kuliah: Pengembangan Pembelajaran Bahasa dan Sastra Indonesia* (M. Pd. Dr. Sri Sukasih, Ed.). Penerbit Cahya Ghani Recovery.

Radiansyah, R., Sari, R., Jannah, F., Prihandoko, Y., & Fitri Rahmaniah, N. (2023). Improving children's critical thinking skills in elementary school through the development of problem-based learning and HOTS models. *International Journal of Curriculum Development, Teaching and Learning Innovation*, *1*(2), 52–59. https://trigin.pelnus.ac.id/index.php/Curriculum/index%0AImproving

Ramli, U., Rizal, M., & Zaelani, A. S. (2025). Peningkatan Hasil Belajar Matematika Materi Trigonometri Melalui Model Problem Based Learning Berbasis Media Audiovisual. *SCHOLARIA: Jurnal Pendidikan dan Kebudayaan* *15*(1), 84–92. https://doi.org/10.24246/j.js.2025.v15.i1.p84-92

Realitawati, R., Ikrom, F. D., Herawan, E., & Kadarsah, D. (2024). PENERAPAN 4C SKILLS DALAM PEMBELAJARAN ABAD 21 DI SEKOLAH DASAR. *Jurnal Madrasah Ibtidaiyah*, *10*, 22–32. https://doi.org/10.31602/muallimuna.v10i1.15533

Saputra, H. (2020). Pembelajaran Berbasis Masalah (Problem Based Learning). *Perpustakaan IAI Agus Salim*, *April*, 1–9. http://repository.uin-malang.ac.id/4643/

Sari, E. P., Trianto, A., & Utomo, P. (2020). Kesulitan Menulis Teks Eksplanasi Siswa Kelas Viismpnegeri 14 Kota Bengkulu. *Jurnal Ilmiah KORPUS*, *4*(3), 292–302. https://doi.org/10.33369/jik.v4i3.13100

Sari, Y. I., Sumarmi, Utomo, D. H., & Astina, I. K. (2021). The Effect of Problem Based Learning on Problem Solving and Scientific Writing Skills. *International Journal of Instruction*, *14*(2), 11–26. https://doi.org/10.29333/iji.2021.1422a

Sari, Y. W., Damayanti, V. S., & Kosasih, E. (2023). Pengembangan Model Multisensori Berbantuan Infografis Animasi Dalam Pembelajaran Menulis Teks Eksplanasi. *Prosiding Seminar Daring Internasional Riksa Bahasa XVII*, 224–245.

Pinastiti, G. S., Andayani, & Sumarwati. (2020). Penerapan Problem Based Learning Untuk Meningkatkan Minat Dan Keterampilan Menulis Teks Eksplanasi. *Jurnal Sebelas Maret*. *8*(1), 100–108. https://doi.org/https://doi.org/10.20961/basastra.v8i1.41964

Susilawati, S., & Supriyatno, T. (2023). Problem-Based Learning model in improving critical thinking ability of elementary school students. *Advances in Mobile Learning Educational Research*, *3*(1), 638–647. https://doi.org/10.25082/amler.2023.01.013

Tampubolon, G., Sianturi, H., Sitotus, J., Simbolon, Y., Siregar, R., & Tansliova, L. (2024). Penggunaan Problem Based Learning (PBL) Untuk Meningkatkan Kemampuan Berpikir

Kritis dan Kemampuan Berbahasa Indonesia. *Jurnal Multidisiplin Indonesia*, *3*(1), 843–847.

Tanjung, J. H., & Lubis, F. (2024). Penggunaan Infografis Sebagai Media Pembelajaran Terhadap Kemampuan Menulis Teks Deskripsi. *Jurnal Unimed*, *8*(4), 709–714.

Oktariani, V.T., Joko Raharjo, T., Avrilianda, D., Subali, B., & Dasar Sekolah Pascasarjana Universitas Negeri Semarang, P. (2025). Efektivitas Penggunaan Multimedia Interaktif Dalam Pembelajaran Terhadap Kemampuan Kognitif Siswa Kelas V Sekolah Dasar. *Pandas:Jurnal Ilmiah Pendidikan Dasar*, *10*(01), 154–163.

Utaminingsih, E. S., Ellianawati, E., Widiarti, N., Sumartiningsih, S., & Puspita, M. A. (2023). A Systematic Review: Digital Literacy for Strengthening Character in Facing the Era of Society 5.0. *Research and Development Journal of Education*, *9*(2), 638–647. https://doi.org/10.30998/rdje.v9i2.15173

Utaminingsih, E. S., Puspita, M. A., Ihsandi, A., Intania, B. Y., Prasetya, A. T., & Ellianawati, E. (2023). Systematic Literature Review: The Role of Character-Based Digital Literacy in 21st Century Learning in Elementary Schools. *Jurnal Penelitian Pendidikan IPA*, *9*(10), 829–840. https://doi.org/10.29303/jppipa.v9i10.4858

Widodo, S., & Wardani, R. K. (2020). Mengajarkan Keterampilan Abad 21 4C (Communication, Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation). *MODELING: Jurnal Program Studi PGMI*, *7*(2), 185–197. https://doi.org/10.69896/modeling.v7i2.665

Zahwa, F. A., & Syafi'i, I. (2022). Pemilihan Pengembangan Media Pembelajaran Berbasis Teknologi Informasi. *Equilibrium: Jurnal Penelitian Pendidikan Dan Ekonomi*, *19*(01), 61–78. https://doi.org/10.25134/equi.v19i01.3963