

Sharpening Critical Reasoning: The Application of Problem-Based Learning in Writing Explanatory Texts in Elementary Schools

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Abstract

The aims of this research lies in discussions related to the application of the Problem Based Learning (PBL) model in learning to write explanatory texts; (2) Describe aspects of critical reasoning based on the 4C category (Critical Thinking, Creativity, Collaboration, Communication) in learning to write explanatory texts by applying the PBL model, and (3) Describe the implications of applying the PBL model in writing explanatory texts as a reinforcement of critical reasoning dimensions based on category 4C for class VI students at SD Negeri Sragen 02 Gatak Sukoharjo for the 2024/2025 academic year. The data used are the results of observations, interviews and documentation related to a series of student activities in learning to write explanatory texts using the PBL model; critical reasoning aspects mastered by students. Data sources were obtained from teachers and students of class VI SD Negeri Sragen 02 Gatak Sukoharjo. Data was collected using observation, interviews and documentation. Data validity uses triangulation of sources, methods and theories. Data was analyzed using interactive analysis starting from data collection, data reduction, data presentation, and drawing conclusions. The research results showed that the implementation of learning to write explanatory texts using the PBL model was carried out in the stages of problem orientation; learning organization towards problems; investigation; development of work results, and continuous evaluation. The aspects of critical reasoning that students master are creative thinking, creativity, collaboration and communication which are based on active interaction and student independence in learning.

Keywords: *problem based learning model, critical reasoning, critical thinking, creativity, communications*

Introduction

Education is an organized system and has a fairly wide function, namely everything related to physical development, health, skills, thoughts, feelings, will, social and beliefs. In the midst of an increasingly complex development of the times, the ability to think critically is one of the competencies that is urgently needed to face global challenges (Hidayati et al., 2024). One way to develop these critical thinking skills is to take advantage of the right approach in the learning process. One approach that is considered effective in developing critical thinking skills is the Problem Based Learning (PBL) model (Damayanti et al., 2024; Maryati et al., 2022). The PBL model is sought to be an alternative for teachers to carry out learning activities effectively and meaningfully. The expected

goal of meaningful learning is the development of a theoretical and practical understanding of teaching materials that are related to the development of critical reasoning skills (Harahap & Lubis; Wahyudi et al.).

The PBL model is one of the learning models that focuses on solving real problems as a way to learn actively and guided (Mutiaramses & Fitria, 2022; Rarawati Dewi et al., 2024). Not only does it apply as a framework that animates the implementation of learning, but also a strategy that is expected to provide positive changes to students. This model not only teaches students to find solutions to a given problem, but also involves them in the process of analysis, reflection, and decision-making (Pratiwi et al.). The characteristics of the PBL model have great potential in practicing critical thinking skills, especially in the context of writing texts, such as explanatory texts of various phenomena that have been passed through (Wicaksono and Irianti; Rahayu et al.) Explanatory text writing, which is one of the essential skills in the elementary education curriculum, teaches students to think systematically, logically, and structured (Hanun et al., 2025; Sholeh et al., 2025).

The application of the PBL model in elementary schools can be integrated into Indonesian teaching materials for writing explanatory texts. The structure of the presentation of explanatory texts includes the arrangement of the text, the selection of diction, the use of punctuation, and the use of effective and meaningful sentences (Astuti et al., 2020; Rifai & Yayang, 2025). The structure can be understood by students in depth by using the PBL model. There for, SD Negeri Sragen 02 Gatak Sukoharjo, as one of the educational institutions that organizes learning for children with the aim of developing the potential of scientific thinking systematically which will later become a critical reasoning concept. Writing explanatory texts requires a deep understanding of complex concepts and the ability to organize ideas in a clear and logical way. This is in line with the importance of integrating learning approaches and models that are in accordance with student characteristics so that they can foster critical reasoning skills among students (Nugrahani, 2024). Therefore, this research aims to contribute to learning to write explanatory texts carefully and interestingly.

Critical thinking skills as part of the 21st century competencies known as the 4Cs (Critical Thinking, Creativity, Collaboration, Communication) have an important role in education, especially at the elementary school level. The critical reasoning dimension, which is the focus of the 4Cs concept, allows students to analyze, evaluate, and solve problems in a logical, structured, and evidence-based manner (Okta & Yayang, 2025; Sadikin et al., 2022). In the context of learning to write explanatory texts, this skill helps students to understand the cause-and-effect relationship in depth and convey their ideas in a coherent manner. The PBL model is one of the relevant approaches because it positions students as active problem solvers who must explore, formulate, and develop solutions to real problems faced. By integrating PBL in writing learning, students are not only honed in critical thinking, but also trained to understand explanatory texts contextually, so that learning becomes more meaningful and relevant to daily life. This is in line with the educational goal of producing a generation that is able to think critically, creatively, and solutely in facing the challenges of the times (Hartini et al., 2021).

A problem that is often found in learning to write in elementary school is the low skill of students in writing explanatory texts in a systematic and structured manner (Subekti et al., 2024). Explanatory texts aim to explain the process or reason behind a phenomenon, requiring students to have logical, analytical, and critical thinking skills. However, in practice, many students have difficulty organizing ideas and conveying information clearly and precisely. Learning that tends to be monological and does not

actively involve students in the teaching and learning process, has the potential to limit the development of critical thinking skills. In addition, passive learning and lack of effective strategies in encouraging students to think critically can hinder the development of students' writing skills. Therefore, innovation is needed in a learning approach that not only focuses on the final result of the writing, but also on the development of a deep critical thinking process as evidenced by the results of writing careful and interesting explanatory texts (Sawitri et al., 2024). Such a situation makes teachers try to provide alternatives as a solution to prevent a decrease in quality and quantity in the Indonesian learning process. Teachers' efforts by applying the PBL model in learning to write explanatory texts to develop the critical reasoning dimension in students gradually with the result of a change in attitude and focus on teaching materials. The essence of critical reasoning focuses on the ability to identify, understand, and generalize statements and discourses related to a phenomenon that has passed.

This research is very important because it will make a real contribution to achieving the quality of writing learning at SD Negeri Sragen 02 Gatak Sukoharjo. By implementing the PBL model, it is hoped that students can be invited to actively participate in the learning process, so that students can develop critical thinking skills through problem-solving that is relevant to daily life carried out theoretically and practically through writing explanatory texts. The PBL model used by teachers not only provides opportunities for students to practice writing explanatory texts in a more structured manner, but also strengthens students' ability to analyze and assess information objectively and form the absoluteness and validity of the source of information from each phenomenon (Damayanti et al., 2024).

The background of the problem underlying the implementation of this research is learning to write explanatory texts in elementary schools (Jumani et al., 2024). This research is also relevant to the government's efforts to continue to strive to achieve the quality of education by introducing various innovative approaches in learning. One of the goals of national education is to develop the quality of students' critical thinking, and this research can be a reference for the development of more effective learning models in the future as an identification of learning needs in the 21st century to welcome a golden Indonesia (Rahmadi, 2019; Rahmawati et al., 2021).

The main problem to be solved in this study is how to apply the PBL model in writing explanatory texts and strengthen the critical reasoning dimension of students based on the 4C aspect at SD Negeri Sragen 02 Gatak Sukoharjo. This study also describes the learning process and learning outcomes along with the implications produced on the application of the PBL model in learning to write explanatory texts in elementary schools. Relevant previous research has shown that the application of the PBL model can train students' critical thinking skills, as found in a study by (Mutiaramses & Fitria) that examined the use of PBL in Indonesian learning in elementary schools. The study shows that PBL is effective in training students' analytical and problem-solving skills. In addition, research by (Sani et al.) also revealed that the PBL model can strengthen students' writing ability oriented to the essence of critical reasoning in accordance with the content of the Pancasila student profile, especially in writing explanatory texts. The hope realized by the researcher through the implementation of this research is that the learning process is more effective and meaningful in terms of language mastery, vocabulary, the use of punctuation, and the preparation of sentences to build coherent and sustainable knowledge theoretically and practically.

The novelty of this study lies in the effort to apply the PBL model in learning to write explanatory texts in elementary schools as a reinforcement of the critical reasoning

dimension in the Pancasila student profile (Jumani et al., 2024; Sani et al., 2024). Although PBL has been applied in various disciplines and levels of education, its application in the context of learning to write explanatory texts, especially for elementary school students, is still limited in discussing critical reasoning criteria based on the 4C aspects. This research also offers a new approach by linking learning to write explanatory texts with the strengthening of the critical thinking dimension. In addition, this study proposes the use of the PBL model as a way to train students' writing quality, which focuses not only on mastering writing techniques, but also on the development of students' analytical and evaluative skills. Thus, students' understanding can develop continuously through a problem-solving-based learning process.

Based on the description above, this study aims to (1) describe the learning process of writing explanatory texts as a reinforcement of the critical reasoning dimension. (2) Describe the aspects of critical reasoning based on the 4C criteria carried out by students in learning to write explanatory texts and (3) describe the implications of applying the PBL model in learning to write explanatory texts as a reinforcement of the critical reasoning dimension in grade VI students at SD Negeri Sragen 02 Gatak Sukoharjo for the 2024/2025 school year. This research is expected to contribute to the development of innovative and effective learning methods, especially in learning to write explanatory texts, as well as provide new insights for teachers and education practitioners in achieving the quality of learning in elementary schools.

Method

This study uses a descriptive qualitative method. The approach used is a case study anchored with a single case (Nugrahani). The problem studied is how to implement the PBL model in writing explanatory texts to strengthen critical reasoning skills based on the 4C (Critical Thinking, Creativity, Collaboration, and Communication) aspects. This study aims to (1) Describe the application of the PBL model in learning to write explanatory texts; (2) Describe the aspects of critical reasoning based on the 4C category (Critical Thinking, Creativity, Collaboration, Communication) in learning to write explanatory texts by applying the PBL model, and (3) Describe the implications of applying the PBL model in writing explanatory texts as a reinforcement of the critical reasoning dimension based on the 4C category (Critical Thinking, Creativity, Collaboration, Communication) in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo for the 2024/2025 school year.

The data used in this study are in the form of observations, interviews, and documentation from the application of the PBL model in writing explanatory texts as a reinforcement of the critical reasoning dimension based on the 4C aspects (Critical Thinking, Creativity, Collaboration, Communication). Data sources were obtained from teachers and students of grade VI of SD Negeri 02 Sragen Gatak Sukoharjo for the 2024/2025 school year. Data were collected through observation, in-depth interviews, and documentation (Nugrahani). Observation activities are carried out by observing the implementation of learning to write explanatory texts using the PBL model, then assessments are carried out according to the observation sheet. The in-depth interview stage is conducted on the teacher to get information on the final results obtained by students when learning to write explanatory texts using the PBL model. Interviews with students were conducted to describe students' critical reasoning skills based on the 4C aspects supported by interviews with grade VI teachers. Documentation is used to take videos and images during the learning process of writing explanatory texts using the PBL model.

After the data is collected, data validity is carried out using triangulation. The triangulation method used is triangulation of sources, methods, and theories. Data collected through observation, interviews, and documentation are checked for validity with data derived from data sources. Then the suitability is checked based on the theory of learning to write explanatory texts, the PBL model, and the critical reasoning aspect based on the 4C aspect. Thus, the research data is valid and continues to the data analysis stage. The research data was analyzed using the interactive analysis of the Milles and Hubberman model which consisted of data collection, data reduction, data presentation, and conclusion drawing (Nugrahani).

Data that have been tested for validity are collected based on the categories selected to be reduced according to the formulation of the problem to answer the research objectives. The data was processed through a process of simplification, data classification, and continued with the presentation of the results in an interactive descriptive manner. The results of the research are adjusted to the formulation of the problem and the purpose of the research so that valid conclusions can be drawn. The instruments used in this study are in the form of observation sheets, interviews, and documentation.

Results

Implementation of the Problem Based Learning Model in Writing Explanatory Texts in Elementary Schools

The findings of the study reveal how the PBL model is applied in writing explanatory texts in grade VI of SD Negeri Sragen 02 Gatak Sukoharjo for the 2024/2025 school year. The description of the learning process carried out in the classroom is based on PBL syntax. The learning process is based on PBL syntax which consists of the stages of problem orientation, organizing learning, investigating, presenting results, as well as evaluation and reflection. To see the effectiveness of this model, an analysis of student involvement and understanding of the material at each stage of learning was carried out. The following table presents the findings:

Table 1 Student involvement and understanding of the material in learning

PBL Learning Stages	Student Engagement (%)	Student Engagement (%)
Problem Orientation	85	70
Learning Organizing	80	75
Investigation	78	80
Presentation of Results	82	85
Evaluation and Reflection	76	88

Based on table 1 above, it can be concluded that each stage of PBL makes an equally important contribution in relation to student engagement and understanding. Student involvement showed the highest level in the Orientation of the Problem stage of 85%, because the teacher provided an attractive stimulus for students in the form of a phenomenon that students paid attention to. However, the understanding of the material only reaches 70% because students have just understood a simple concept regarding the material. During PBL, the increase in material understanding occurs significantly, especially in the Investigation and Presentation of Results stages when students discuss, analyzes information, and compiles explanatory texts at a more systematic level. In the Evaluation and Reflection stage, a much higher improvement was achieved with 88%

comprehension of the material. This means that reflection on learning performance helps students reflect to impress their critical concepts and thinking. This pattern of improvement gives the idea that PBL as a teaching model requires students to think critically, collaborate, argue and then make decisions based on evidence, which is the main goal of writing explanatory texts. The details of the findings are outlined as follows.

Problem Orientation Stage

The teacher begins learning by introducing a real phenomenon that is relevant to the student's life, such as "why does it rain" or "the impact of floods on daily life." This phenomenon is presented through short videos and visual images on interactive boards. Teachers piqued students' curiosity by asking open-ended questions, such as: "What caused this phenomenon to occur?" or "How can we explain the process?" Students showed enthusiasm, many spontaneously expressed their initial opinions. The results of the study showed that the learning process of writing explanatory texts with the Problem-Based Learning (PBL) model in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo was effective, characterized by increased curiosity, active participation, and students' ability to present ideas and compile explanatory texts in sequence based on real phenomena introduced through visual media and open-ended questions.

Learning Organization Stage

Teachers divide students into small, heterogeneous groups, ensuring each group has students with diverse abilities. Each group was given the task of identifying the problem of the phenomenon presented. The teacher provides directions on the steps that students must take, such as gathering information, discussing solutions, and compiling explanatory texts together. Teachers also provide worksheets that contain guides to help students stay focused throughout the learning process. The results of the study show that the learning process of writing explanatory texts with the Problem-Based Learning (PBL) model at the learning organization stage in grade VI of SD Negeri Sragen 02 Gatak Sukoharjo takes place in a structured and collaborative manner, where students work in heterogeneous groups to identify problems, collect information, discuss solutions, and compile explanatory texts with teacher guidance and worksheets that help maintain learning focus.

Independent and Group Investigation Stage

Students in the group began to discuss and seek more information, either through textbooks, notes, or digital resources provided by the teacher. Teachers act as facilitators, moving from one group to another, providing encouragement, answering questions, and clarifying misunderstandings. Teachers often ask provocative questions, such as: "What is the main cause of this problem?" or "How do I best explain this process?" This approach motivates students to think more specifically. The results of the study showed that in the process of learning to write explanatory writing with the PBL model at the investigation stage, grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo actively discussed, sought information from various sources, and received guidance from teachers who acted as facilitators by providing provocative questions to encourage critical thinking and deeper understanding.

Stage of Presentation of Results

Each group was given the opportunity to present the results of their work in the form of explanatory texts. The teacher provides time for other groups to give responses

or questions to the presentation. Discussions between groups are dynamic, with students trying to defend arguments based on the evidence they have gathered. Teachers praise students' efforts and provide constructive feedback, explaining the advantages and aspects that need to be improved. The results of the study show that in the stage of presenting the work with the PBL model, the learning process of writing explanatory texts in grade VI of SD Negeri Sragen 02 Gatak Sukoharjo takes place dynamically through group presentations, active discussions, and constructive teacher feedback, even though students face challenges in defending arguments and organizing evidence systematically.

Evaluation and Reflection Stage

At this stage, the teacher directs students to reflect on the learning process that has been undertaken. The teacher asks questions, such as: "What did you learn today?" and "How does critical thinking help you complete this task?" Students actively respond, mentioning the importance of cooperation and logical thinking in compiling explanatory texts. The teacher closes the lesson by conveying a conclusion about the importance of critical reasoning in understanding and explaining the surrounding phenomena descriptively in the form of explanatory writing. The results of the study showed that in the evaluation and reflection stage of the PBL model, teachers guided grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo to reflect on learning through trigger questions, which encouraged students to identify the benefits of critical thinking and cooperation in writing explanatory texts, as well as conclude the importance of critical reasoning in understanding phenomena descriptively.

The integration of PBL syntax by teachers in learning to write explanatory texts in grade VI of SD Negeri Sragen 02 was effective and interactive. Teachers not only succeed in guiding students through the PBL stages, but are also able to create a learning atmosphere that involves active participation and strengthens students' critical reasoning skills. This process shows that the PBL model can be an effective approach in problem-based learning, especially in the context of writing explanatory texts. To further clarify how each learning stage in the PBL model affects student engagement and material comprehension, Graph 1 is presented.

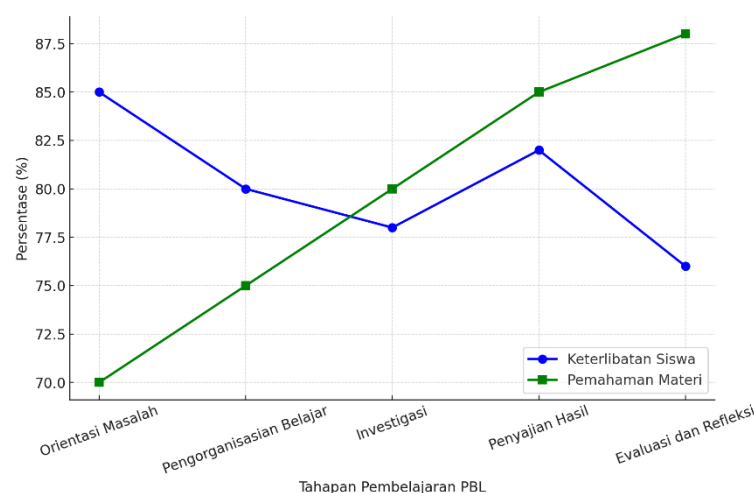


Figure 1. Student involvement and understanding of the material in PBL

Graph 1 shows that student engagement tends to be high in the early stages (85%) and decreases slightly as the learning process progresses. On the contrary, the understanding of the material gradually improved, reaching its peak in the Evaluation and

Reflection stage (88%). This shows that the PBL model not only actively engages students in the learning process, but also helps them develop a deeper understanding of the material being studied.

Critical Reasoning Aspects based on the 4C Aspects (Critical Thinking, Communication, Collaboration, Creativity) with the PBL Model in Elementary Schools

The findings of the study show that learning to write explanatory texts using the PBL model has a positive contribution to students with a deep understanding classified based on aspects of critical reasoning. The discussion of each finding in grade VI of SD Negeri Sragen 02 Gatak Sukoharjo is explained as follows.

Critical Thinking (Student Analysis and Evaluation)

During the group discussion, the teacher asked a triggering question such as, "Why can climate change affect extreme weather in various countries?" Students gave a variety of answers, such as increased temperatures due to the greenhouse effect and human activities. Teachers actively respond to students' answers by directing them to analyze the underlying causes, for example by asking, "How do human activities contribute to carbon dioxide emissions?" When students begin writing explanatory text, the teacher reads the initial draft and notes directly on their writing. For example, one student mentioned that "felling trees causes less rainfall," the teacher responded by asking, "Can you explain how this process occurs scientifically?" This question encourages students to think more deeply and include scientific data to support the argument. The results of the study show that the learning process of explanatory writing with the PBL model in grade VI of SD Negeri Sragen 02 Gatak Sukoharjo improves students' critical reasoning skills, characterized by active involvement in discussions, the ability to analyze in-depth causes, and the use of scientific data to support arguments in written and explanatory ones.

Communication: Clarity of Ideas in Text

Teachers also pay attention to students' ability to convey ideas clearly and structured. When reading the explanatory text, the teacher gives feedback regarding the use of causal conjunction words such as "because" or "so." One of the students used the sentence: "Greenhouse gases make the earth hot so that the weather changes." The teacher corrected by giving instructions, "Try adding an explanation of how greenhouse gases trap the sun's heat." In addition, teachers also invite students to read their writings in front of the class. When a student speaks in a flat intonation, the teacher gives feedback by saying, "Use an intonation that shows enthusiasm so that your ideas can be more easily understood by your peers." The results of the study show that in the process of learning to write explanatory writing with the PBL model in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo, the critical reasoning aspect of Communication develops through teacher guidance in the use of causal connecting words, conveying ideas clearly, as well as training intonation and enthusiasm when reading written results.

Collaboration: Group Reflection

After finishing writing, the teacher asked each group to exchange their work. Students are asked to give constructive comments on the writings of other groups. The teacher guides this process by providing good examples of feedback, such as: "This text already explains the causes of climate change, but it lacks depth in explaining its impact on human life." Teachers ensure that every student understands that collaboration is a

process of learning together, not just judging. The results of the study show that the learning process of writing explanatory writing with the PBL model in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo improves the critical reasoning aspect of Collaboration, as seen from the involvement of students in exchanging works, providing constructive feedback, and understanding collaboration as a collaborative learning process guided by teachers.

Creativity: Innovative Approaches to Writing

Teachers also encourage students to add visual elements in the explanatory text, such as diagrams or illustrations. When a student creates a carbon cycle diagram, the teacher gives both praise and advice, "The diagram is good, but try to add a brief explanation for each stage of the cycle so that the reader understands it more clearly. The results of the study show that in learning to write explanatory texts with the PBL model, the critical reasoning aspect of Creativity in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo develops through the teacher's encouragement to add visual elements, such as diagrams or illustrations, as well as providing constructive feedback to improve the clarity and understanding of the content of the text. Based on the exposure related to the critical reasoning aspect reviewed from the 4 C's concept in learning to write explanatory texts using the PBL model, it can be concluded that Critical Thinking can be seen in students' ability to analyze and evaluate information, for example when students are asked to explain the relationship between human activities and climate change with the support of scientific data. Communication develops through the delivery of clearer and more structured ideas, both in writing and oral presentations, supported by teacher feedback on the use of causal conjunction and intonation when speaking. Collaboration is reflected in group reflection activities, where students exchange works and provide constructive feedback to improve mutual understanding. Meanwhile, Creativity emerged through innovative approaches in writing, such as the use of diagrams and illustrations equipped with brief explanations to clarify the concepts conveyed. Thus, the PBL model in learning to write explanatory writing has proven to be effective in developing students' critical thinking skills while improving communication, collaboration, and creativity skills.

Implications of the Application of the PBL Model in Writing Explanatory Texts as a Reinforcement of Critical Reasoning Dimensions Based on the 4C Category (Critical Thinking, Creativity, Collaboration, Communication)

The findings of this study reveal what are the practical implications after the application of the PBL model in writing explanatory texts in grade VI students of SD Negeri Sragen 02 gatak Sukoharjo for the 2024/2025 school year. The application of the Problem-Based Learning (PBL) model in learning to write explanatory texts has a significant impact on strengthening students' critical reasoning dimensions, especially in the 4C framework which includes Critical Thinking, Creativity, Collaboration, and Communication. The PBL model not only builds students' conceptual understanding, but also hones the ability to think reflectively, collaborate, and convey ideas effectively. In the Critical Thinking aspect, students show an increase in their ability to analyze and evaluate information in more depth. The problem-based learning process encourages students to look for causal relationships in the phenomena they are learning. Teacher-led discussions raise critical questions that demand students to think logically and include scientific data in the explanatory texts created. Students become more accustomed to identifying problems,

presenting evidence-based arguments, and developing a systematic mindset in composing explanatory texts.

The Creativity aspect develops through the exploration of various ways of presenting information, not only in written form but also by utilizing visual elements such as diagrams, illustrations, and concept maps. Teachers provide space for students to display students' creativity in compiling explanatory texts that are more interactive and interesting to readers. Through constructive feedback, students learn how to develop ideas and connect concepts innovatively to clarify their understanding of a phenomenon.

In the Collaboration dimension, students experience effective team-based learning. PBL teaches students the importance of sharing ideas, accepting constructive criticism, and working together in completing assignments. The group reflection process, in which students exchange writing results and provide feedback, strengthens collective understanding and improves students' ability to evaluate the quality of explanatory texts. This approach creates a supportive learning environment and builds a respectful attitude in academic interactions. Meanwhile, the Communication aspect has experienced a noticeable strengthening in this learning. Teachers guide students to hone their skills in conveying ideas in sequence, both in written and oral form. The use of causal conjunction and clearer sentence structure are the main concerns in the preparation of explanatory texts. In addition, through the activity of reading the written results in front of the class, students are trained to speak with the right intonation and display expressions that support the audience's understanding. Thus, the application of the PBL model in learning to write explanatory texts has positive implications in developing students' critical thinking skills. Students are not only able to understand concepts better, but also be able to convey ideas clearly, work together in groups, and display creativity in composing more interesting and weighty explanatory texts. This model has been proven to strengthen the critical thinking dimension and form reflective thinking habits that will be useful for students in higher education.

The findings of the study show that the integration of Problem-Based Learning (PBL) syntax in learning to write explanatory texts in grade VI of SD Negeri Sragen 02 shows significant effectiveness in increasing students' active participation and critical reasoning skills. These findings are in line with previous research that states that the PBL model is able to create a more collaborative and exploratory learning environment, where students are encouraged to critically analyze and evaluate phenomena in the context of academic writing (Kurniawan et al., 2024). The application of PBL syntax by teachers not only guides students through the stages of problem exploration, investigation, and text preparation, but also develops reflective skills in critical thinking and communication (Subekti et al., 2024). The implications of these findings suggest that the PBL model can be used as an effective strategy in improving more in-depth and problem-solving-based explanatory writing skills, which also contributes to the strengthening of the 4C dimension in critical thinking (Sani et al., 2024). However, the obstacles that arise in this study are similar to the previous findings, namely challenges in students' adaptation to a more independent and discussion-based approach, especially for those who are used to conventional learning methods (Sariyati et al., 2024). Therefore, to increase students' enthusiasm in learning to compile explanatory writing, more intensive mentoring from teachers is needed as well as differentiation strategies that can accommodate different levels of student understanding in problem-based learning.

The findings of the study revealed that students' ability in Critical Thinking as seen from the analysis and evaluation of information, especially in explaining the relationship between human activities and climate change with the support of scientific data, is in line

with the findings of previous research which showed that Problem-Based Learning (PBL) is able to improve critical thinking skills through evidence-based problem exploration (Jumani et al., 2024). In the context of learning to write explanatory texts, students are not only invited to understand concepts passively, but also directed to examine the causes and effects of a phenomenon, as confirmed by Abidin's research (et al.), which found that problem-solving-based strategies encourage students to ask reflective questions to deepen students' understanding. The implications of the results of this study are contributing in shaping students' analytical mindsets, which are not only useful in science learning but also in broader argumentative skills (Damayanti et al., 2024). However, the limitations of this study can be seen in the variation in the depth of student analysis, which is determined by the habit of accessing credible scientific information sources, as stated in the results of Agustin's (et al.) research, which discusses the importance of resource accessibility in improving critical thinking in inquiry-based learning. Therefore, the results of this study provide insight into the importance of teacher guidance in building students' scientific literacy skills to maximize the use of the PBL model in improving evidence-based understanding.

The communication aspect in learning to write explanatory texts with the Problem-Based Learning (PBL) model shows significant development in conveying clearer and structured ideas, both in written form and oral presentations. The results of this study are in line with previous findings that show that problem-based learning is able to improve students' communication skills through a more intensive process of reflection and social interaction (Sawitri et al., 2024). Teachers' feedback on the use of causality conjunction plays an important role in helping students construct more logical and coherent sentences, as pointed out by Septonanto (et al.), that explicit strategy-based learning can significantly improve the quality of students' writing. In addition, the intonation aspect of speaking also contributes to improving oral communication, which is in line with the findings of Hartini (et al.), that effective communication in academic discussions can strengthen students' understanding of concepts and involvement in learning. The implications of the results of this study show that the PBL model makes a positive contribution to honing students' communication skills not only in the form of more systematic written expression, but also in the courage to convey ideas orally with better clarity and intonation.

The results of this study show that the collaborative aspect in learning to write explanatory texts with the Problem-Based Learning (PBL) model is reflected in group reflection activities, where students exchange works and provide constructive feedback to improve mutual understanding. These findings are in line with research conducted by (Gunawan and Hasan), which stated that cooperation in small groups can improve students' critical thinking skills and involvement in understanding the material more deeply. Furthermore, Slavin (2019) emphasized that in the context of collaboration-based learning, students not only receive input from teachers but also from peers, which can strengthen students' understanding of the structure of the text and the content of the material being studied. The implications of the results of this study show that group reflection contributes to the improvement of students' metacognitive abilities, which allows them to evaluate and revise students' writing more effectively based on the input provided by their group mates (Pratiwi et al.).

The findings of this study also discuss that Creativity in learning to write explanatory texts with the Problem-Based Learning (PBL) model is reflected in the use of innovative approaches, such as the use of diagrams and illustrations equipped with brief explanations to clarify the concepts presented. This finding is in line with previous

research which confirms that visualization in learning improves students' conceptual understanding and helps students organize information more systematically (Handayani et al., 2024). Creativity in writing not only reflects the ability to think divergently, but also plays a role in increasing the attractiveness and readability of explanatory texts, as expressed by Sudiyoko (et al.), that the integration of visual elements in academic writing increases readers' understanding of causal relationships in a phenomenon. The implications of these findings contribute to the development of teaching strategies that are more flexible and adaptive to student needs, especially in building creative thinking skills that are part of 21st century competencies (Rukmini et al., 2023).

The findings of the study reveal that the implications of the application of the Problem-Based Learning (PBL) model in learning to write explanatory texts show a significant contribution in strengthening students' critical thinking skills, in line with the results of previous research which confirmed that PBL is effective in improving students' analytical and reflective abilities in understanding concepts in depth (Nugrahani & Al-Ma'ruf, 2024). In addition, the results of this study support the findings that problem-based strategies can improve students' academic communication skills, especially in conveying ideas with a clearer structure and weighted arguments (Hidayati et al., 2024). From a collaborative perspective, learning with the PBL model allows students to actively collaborate, share ideas, and provide constructive feedback on the work of their peers, as confirmed by research that shows that this approach improves social interaction and problem-solving skills in an authentic learning environment (Agustin et al.). In the dimension of creativity, the results of this study also reinforce the evidence that the PBL model provides space for students to display innovations in expressing their understanding, including through visual elements that clarify explanatory concepts (Nugrahani). However, the limitations of this study are seen in the challenges students face in building reflective thinking habits consistently, as revealed by (Al-Ma'ruf & Nugrahani, 2015), finding that the effectiveness of PBL can vary depending on the level of student involvement and the quality of teacher facilitation. Thus, although the PBL model has been proven to have positive implications in strengthening the critical reasoning dimension, its effectiveness still depends on the continuity of teacher guidance and students' readiness to undergo a problem-solving-based learning process.

The findings of the complex research show that the Problem-Based Learning (PBL) model has been proven not only to build students' conceptual understanding, but also to hone the ability to think reflectively, collaborate, and convey ideas effectively, as supported by previous research that confirms that the problem-based approach improves critical and collaborative thinking skills in project-based learning (Pratiwi et al.). In the context of this study, it was found that students who engaged in group discussions and reflection on their writings showed an improvement in critical reasoning skills, especially in analyzing the causes and consequences of a scientific phenomenon. These findings are in line with the results of previous research which showed that PBL provides a learning environment that facilitates the development of an analytical mindset as well as builds better communication skills through an evidence-based argumentation process (Winanto, 2024). The implications of this study are quite contributive, especially in providing insight into how the PBL model can be applied in the context of learning to write explanatory texts at the elementary school level, which was previously more widely applied in the fields of science and medicine (Al-Ma'ruf, 2024). However, although this model shows positive impacts, there are limitations in its application, especially in terms of students' communication skills that still need further reinforcement in order for students to be able to convey ideas more concisely and systematically in both oral and

written form, as also found in other studies that show that the application of PBL depends on the level of student involvement in well-structured discussions (Sawitri et al., 2024). Thus, while PBL provides substantial benefits in improving critical reasoning, creativity, collaboration, and communication skills, additional supporting strategies are needed to optimize students' communication skills in structuring and conveying ideas more systematically.

Conclusion

The findings of this study reveal how the PBL model is used in writing explanatory texts, aspects of critical reasoning based on the 4C concept (critical thinking, communication, collaboration, and creativity), and practical and theoretical implications in grade VI students of SD Negeri Sragen 02 Gatak Sukoharjo for the 2024/2025 school year. The application of the PBL model in writing explanatory texts shows that learning begins with the problem orientation stage, learning organization on the problem, independent and group investigation (investigation), presentation of explanatory writing, and evaluation ending with reflection. Meanwhile, the critical reasoning aspects that students can master based on Indonesian teaching materials include, critical thinking, communication, collaboration, and creativity. Its practical and theoretical implications include, developing students' critical thinking skills. Students are not only able to understand concepts better, but also be able to convey ideas clearly, work together in groups, and display creativity in compiling more interesting and weighty explanatory texts based on Indonesian teaching materials.

The application of the Problem-Based Learning (PBL) model in writing explanatory texts has positive implications such as developing 21st century skills, increasing learning motivation, and changing learning paradigms, but also faces limitations such as limited time, teacher readiness, and differences in student abilities. To overcome these challenges, some suggestions that can be implemented include teacher training, curriculum adjustments, development of contextual teaching materials, continuous evaluation, and building collaboration between schools. By implementing these strategies, it is hoped that the PBL model can be effectively implemented in learning to write explanatory texts, so as to improve students' critical reasoning skills and prepare them to face future challenges.

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References

- Abidin, M. A., Widayati, M., Veteran, U., Nusantara, B., & Tengah, J. (2024). Penguatan Profil Pelajar Pancasila melalui Pembelajaran Sastra di Sekolah Dasar. *Journal Homepage: Www.Ejournal.Almaata.Ac.Id/Literasi*, XV(1), 83–95.
- Agustin, A. A., Nugrahani, F., & Sudiyana, B. (2024). Picture and Picture Learning Model with Picture Card Media on Grade IV Students ' Interest and Poetry Writing Skills. *Jurnal Elementaria Edukasia*, 7(4), 3197–3208. <https://doi.org/10.31949/jee.v7i4.11028>
- Agustin, N., Setiadi, D., & Suparman, F. (2023). Resistensi Tokoh Utama dalam Novel Yuni Karya Ade Ubaidil. *Indonesia: Jurnal Pembelajaran Bahasa Dan Sastra Indonesia*, 4(3),

268–280.

- Al-Ma'ruf, A. I. (2024). Exploring Ethical Frontiers: Moral Dimensions in the Tapestry of Contemporary Indonesian Literature. *Studies in English Language and Education*, 11(1), 587–604. <https://doi.org/10.24815/siele.v11i1.35142>
- Al-Ma'ruf, I. A., & Nugrahani, F. (2015). Aktualisasi Bahasa Sastra Alam Pendidikan Karakter. *Prosiding Konferensi Internasional Kesusastraan XXXII HISKI Samarinda, 17-18 November 2023* 14, November 2023, 6.
- Astuti, S. P., Sobari, T., & Aeni, E. S. (2020). *Morfologi pada Penulisan Teks Eksplanasi Siswa Kelas VIII SMP PGRI 4 Cimahi*. 3, 21–30.
- Chacon-Hurtado, D., Sirota, S., & Hertel, S. (2022). *Teaching Engineering for Human Rights: Lessons Learned from a case study-based undergraduate class*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85138295145&partnerID=40&md5=b24b65fea91823e07633818b0c9830d1>
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. Sage Publications, Inc.
- Damayanti, L., Widayati, M., & Nurnaningsih. (2024). Pembelajaran keterampilan menulis naskah pidato dengan pendekatan experiential learning pada sekolah dasar. *Pendas Mahakam : Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, 12(2), 173–188. <https://doi.org/10.46368/jpd.v12i2.2658>
- Gunawan, R., & Hasan, M. (2023). Penerapan Model Problem Based Learning Dalam Meningkatkan. *LaGeografia*, 22(1), 12–26.
- Handayani, S., Widayati, M., & Sudiyana, B. (2024). Pemerolehan Bahasa Anak Usia 2-3 Tahun Pada Taman Penitipan Anak Jaya Kartika Dilihat Dari Perkembangan Fonetik Dan Morfemik. *Judika (Jurnal Pendidikan Unsika)*, 12(1), 95–105. <https://doi.org/10.35706/judika.v12i1.11250>
- Hanun, F., Pamungkas, O. Y., Habibullah, A., & Kozin, W. (2025). The Impact of Research-Based Learning and Institutional Support on Student Research Productivity at Madrasah Aliyah Negeri in Jakarta, Indonesia. *Qubahan Academic Journal*, 5(2), 204–223.
- Hartini, S., Nugrahani, F., & Giyatno. (2021). Upaya Meningkatkan Minat dan Hasil Belajar IPS Melalui Powerpoint dan Inquiry Based Learning di SDN Bulakrejo 02. *Educatif Journal of Education Research*, 4(4), 52–59. <https://doi.org/10.36654/educatif.v4i4.126>
- Hidayati, N., Farida Nugrahani, & Suwanto. (2024). Pengaruh Kemampuan Berpikir Kritis dan Minat Baca Terhadap Kemampuan Literasi Digital . *Didaktika: Jurnal Kependidikan*, 13(3 SE-Articles), 3201–3212.
- Jumani, S., Widayati, M., Nurnaningsih, & Ratnaningsih, S. R. (2024). Pembelajaran Menulis Cerita Dengan Media Audio Visual Melalui Model Problem Based Learning Di SD. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, 09(1), 5143–5154.
- Kurniawan, A., Nugrahani, F., & Widayati, M. (2024). Pembelajaran Bahasa dan Sastra di Era Digital Berorientasi Multikultural. *Prosiding Pertemuan Ilmiah Bahasa & Sastra Indonesia (PIBSI XLVI) Universitas Muhammadiyah Purwokerto*, 20(Pibsi Xlvi), 253–265. <https://doi.org/10.30595/pssh.v20i.1374>
- Marlina Harahap, E., & Amalia Lubis, F. (2022). Keterampilan Membaca Kritis Dalam Menganalisis Unsur-Unsur Cerita Fantasi. *LINGUISTIK: Jurnal Bahasa Dan Sastra*, 7(1). <https://doi.org/10.31604/linguistik.v7i1.193-202>
- Maryati, Nugrahani, F., & Widayati, M. (2022). Penerapan Problem Based Learning (PBL) Berbantuan Media Kasamsi dalam Pembelajaran Menulis Pantun di SD. *Jurnal Pendidikan Dan Konseling*, 4(5).

- Mutiaramses, M., & Fitria, Y. (2022). Pengembangan Komik Digital Berorientasi Problem Based Learning (PBL) untuk Meningkatkan Literasi Sains Siswa Sekolah Dasar. *Jurnal Penelitian Pendidikan IPA*, 8(2). <https://doi.org/10.29303/jppipa.v8i2.1349>
- Nugrahani, F. (2024). Pengaruh Metode Task Based Language Teaching (TBLT) dan Motivasi Belajar terhadap Keterampilan Menulis Teks Narasi. *Onoma: Pendidikan, Bahasa Dan Sastra*, 10(4), 4508–4520.
- Nugrahani, F., & Al-Ma'ruf, A. I. (2024). Dimensions of Religiosity and Humanity in Indonesian Literature. *Proceedings of 5th Borobudur International Symposium on Humanities and Social Science (BISHSS 2023)*, 1(Bishss 2023), 833–847. https://doi.org/10.2991/978-2-38476-273-6_87
- Okta, S., & Yayang, O. (2025). Argantara Novel by Falistiyana : A Study of Social Values. *Journal of Language, Literature, and Cultural Dynamics*, 2(1), 12–25.
- Pratiwi, V. U., Nugrahani, F., Sohnui, S., & Taher, M. (2024). Developing Description Writing Skills through Comic-based Story. *Journal of Innovation in Educational and Cultural Research*, 5(1), 150–155. <https://doi.org/10.46843/jiecr.v5i1.996>
- Pratiwi, V. U., Nugrahani, F., Widayati, M., Sudiyana, B., Nurnaningsih, N., & Ermawaty, S. (2024). Meningkatkan Kemampuan Guru dan Siswa SMK Veteran Sukoharjo melalui Pelatihan Menulis Rilis Berita. *Jurnal Pengabdian Pada Masyarakat*, 9(2), 453–466. <https://doi.org/10.30653/jppm.v9i2.744>
- Pratiwi, W. N., Nugrahani, F., & Nurnaningsih. (2023). Peningkatan Kemampuan Berpikir Kritis Siswa melalui Pengembangan Modul Ajar Unsur Intrinsik Cerita Berbasis PBL. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 8(2), 3593–3611.
- Rahmadi, I. F. (2019). Technological Pedagogical Content Knowledge (TPACK): Kerangka Pengetahuan Guru Abad 21. *Jurnal Pendidikan Kewarganegaraan*, 6(1), 65. <https://doi.org/10.32493/jpkn.v6i1.y2019.p65-74>
- Rahmawati, N. D., Rodliyah, I., & Saraswati, S. (2021). Pembelajaran Berorientasi HOTS Sebagai Inovasi Pembelajaran Abad 21. *Sainsteknopak*, 5(1), 1–6.
- Rarawati Dewi, P., Dahlan, & Maysara. (2024). Penerapan Model Problem Based Learning dengan Media Powtoon untuk Meningkatkan Hasil Belajar Kimia. *Jurnal Pendidikan Kimia FKIP Universitas Halu Oleo*, 9(1), 15–25. <https://doi.org/10.36709/jpkim.v9i1.75>
- Rifai, I., & Yayang, O. (2025). Javanese Culture in the Folk Story of Banyumasan Panembahan Situmpur Kapiten Kwe Situmpoa : A Study of Literary Anthropology. *Journal of Language, Literature, and Cultural Dynamics*, 2(1), 1–11.
- Rukmini, R., Nugrahani, F., & Suwanto, S. (2023). Meningkatkan Kemampuan Menulis Cerita Siswa MTs Melalui Model Pendekatan Eksperiental. *Nusantara: Jurnal Pendidikan Indonesia*, 3(3), 467–482. <https://doi.org/10.14421/njpi.2023.v3i3-7>
- Sadikin, H., Nugragani, F., & Suwanto, S. (2022). Penerapan Metode Mind Mapping melalui Ketrampilan Menulis Puisi dalam Interaksi Belajar Mengajar di Kelas IV SD. *Jurnal Pendidikan Dan Konseling*, 4(1), 7132–7139.
- Sani, M., Widayati, M., & Nurnaningsih. (2024). Pembelajaran Menulis Teks Prosedur dengan Model Problem Based Learning Berbantuan Media Flipbook Di SD. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, 12(2), 222–236. <https://doi.org/10.46368/jpd.v12i2.2652>
- Sariyati, S., Widayati, M., Iriani, R., Ratnaningsih, S., Studi, P., Pendidikan, M., Indonesia, B., Pascasarjana, P., & Nusantara, V. B. (2024). Pembelajaran keterampilan menulis permulaan pada sekolah dasar melalui model problem based learning dengan media gambar 1). *HOLISTIK: Jurnal Ilmiah PGSD*, 1, 32–40.
- Sawitri, E., Nugrahani, F., Veteran, U., & Nusantara, B. (2024). Pengaruh Model Contextual

- Teaching And Learning (CTL) Terhadap Minat Belajar dan Keterampilan Menulis Karangan Deskripsi. *Literasi: Jurnal Bahasa Dan Sastra Indonesia Serta Pembelajarannya*, XV(1), 74–82.
- Septonanto, D., Nugrahani, F., & Widayati, M. (2024). Pengembangan Media E-Lkpd Liveworksheet Soal Hots Untuk Meningkatkan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Ilmiah Pendidikan Citra Bakti*, 11(1), 124–138. <https://doi.org/10.38048/jipcb.v11i1.2315>
- Sholeh, K., Pamungkas, O. Y., & Sufanti, M. (2025). The Character Education Revolution: The Impact of Multiple Intelligence-Based Reading Learning on Student Development. *Educational Process: International Journal*, 15(1), 1–21.
- Sih Jami Rahayu, Farida Nugrahani, & Benedictus Sudiyana. (2024). Eksplorasi Potensi Boneka Tangan Sebagai Media Pengembangan Keterampilan Berbahasa Anak Usia Dini. *Jurnal Onoma: Pendidikan, Bahasa, Dan Sastra*, 10(3), 2423–2432. <https://doi.org/10.30605/onoma.v10i3.3789>
- Subekti, L., Nugrahani, F., & Sudiyana, B. (2024). Implementasi Model SAVI (Somatic , Auditory , Visual , Intellectual) Berbantu YouTube pada Pembelajaran Membaca Puisi di Era Merdeka Belajar Sekolah Menengah Pertama. *Didaktika: Jurnal Kependidikan*, 13(4), 4815–4826.
- Sudiyoko, P., Nugrahani, F., & Suwanto, S. (2022). Pengaruh Motivasi Belajar dan Kemampuan Guru Bahasa Indonesia terhadap Prestasi Belajar Siswa Mata Pelajaran Bahasa Indonesia Kelas VIII di SMP Negeri 4 Jatisrono Kabupaten Wonogiri Tahun Pelajaran 2021/2022. *Jurnal Pendidikan Dan Konseling*, 4(1980), 1349–1358.
- Wahyudi, Nugrahani, F., & Giyatno. (2021). Peningkatan Minat dan Hasil Belajar Matematika dengan Model Pembelajaran PBL melalui Conference. *Educatif Journal of Education Research*, 4(4). <https://doi.org/10.36654/edukatif.v4i4.129>
- Wicaksono, A., & Irianti, N. (2022). Pelatihan Pengembangan Pembelajaran Berorientasi Higher Order Thinking Skills (HOTS) bagi Guru Sekolah Dasar. *Jurnal Pengabdian Masyarakat (Abdira)*, 2(1), 21–26. <https://doi.org/10.31004/abdira.v2i1.59>
- Winanto, W. (2024). Pengaruh Keterampilan Menyimak Media Audio Visual Dan Minat Baca Terhadap Kemampuan Menulis Siswa Kelas X AKL 1 SMK Sultan Agung Tirtomoyo. *Literasi: Jurnal Ilmu Pendidikan*, XV.