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Improving Students' Interest and Learning Outcomes in Producing Explanation Texts Through the Scientific Approach Using the Problem-Based Learning Model

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ABSTRACT

Purpose – This study aims to address the low interest and learning outcomes of students in producing explanation texts at MA Nurul Muttaqin Wedi Kapas Bojonegoro. The main objective is to determine the improvement in students' interest and learning outcomes through the Scientific Approach using the Problem-Based Learning (PBL) model during the 2024/2025 academic year.

Methodology – This research employed a classroom action research (CAR) design involving 15 students of Grade XII Social Sciences. The study consisted of a pre-cycle and one cycle of intervention. Data were collected through observation and written tests. During the pre-cycle, students received explanation text material through conventional lecturing and completed a preliminary test. In Cycle 1, instructional actions were implemented using the PBL model to enhance students' engagement and performance. Data analysis included descriptive comparison of student interest and test achievement before and after the intervention.

Findings – The pre-cycle results showed that only 5 students (33%) demonstrated interest in producing explanation texts, while 10 students (67%) exhibited low interest. Learning outcomes were also low, with merely 1 student (6.66%) achieving the minimum mastery criterion (75). After implementing PBL in Cycle 1, student performance improved significantly: 8 students (54%) scored 100, while the remaining 7 students (46%) scored 80, resulting in a 100% mastery rate. Student interest also increased substantially based on observation indicators. These findings indicate that the PBL model effectively enhances both student interest and learning outcomes.

Novelty – This study contributes to the field by demonstrating the effectiveness of integrating the Scientific Approach with the PBL model to improve students' ability to produce explanation texts—an area that has received limited empirical attention in Indonesian secondary education.

Significance – The findings provide practical insights for teachers, curriculum developers, and education practitioners in designing learning strategies that enhance student engagement and performance, especially in language learning and text production.

Keywords: Explanation Text, Learning Outcomes, Problem-Based Learning, Scientific Approach, Student Interest

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1. Introduction

MA Nurul Muttaqin Wedi Kapas Bojonegoro is the only private Madrasah Aliyah situated in the Kapas District, serving as an educational institution committed to nurturing students' academic and non-academic competencies. Among the essential skills emphasized by the institution are speaking and writing, both of which play a significant role in shaping students' communication abilities in oral and written contexts. The Indonesian Language subject becomes particularly important as it integrates the development of these productive language skills.

Under the implementation of the 2013 Curriculum, Indonesian Language learning adopts a text-based approach, requiring students to master various text genres. However, not all genres are equally appealing or easy for students to learn. One of the genres that students consistently perceive as challenging is the explanation text, which demands the ability to describe causal relationships and logical sequences clearly. This challenge is evident in the pre-cycle test results, where more than 90 percent of students scored below the minimum competency standard for explanation text writing. Additionally, interviews with twelfth-grade students revealed that many find explanation text learning uninteresting and struggle to generate ideas independently. This issue is exacerbated by the teacher's reliance on lecture-based instructional methods, resulting in passive learning and reduced student engagement.

Given these challenges, there is a pressing need to introduce an instructional approach that actively engages students and stimulates both motivation and critical thinking. The researcher identifies Classroom Action Research (CAR) as an appropriate method to systematically investigate and improve students' interest and learning outcomes in producing explanation texts. One promising pedagogical model that aligns with these goals is Problem-Based Learning (PBL). As supported by international research, PBL positions students at the center of learning, encouraging them to explore real-world problems, engage in inquiry, and construct knowledge collaboratively (Hmelo-Silver, 2017; Savery, 2015). Such characteristics are particularly beneficial for writing instruction, where idea generation, reasoning, and clarity of expression are required.

Problem-Based Learning provides opportunities for students to deepen their understanding by actively seeking information, analyzing issues, and presenting solutions. These learning processes align closely with the cognitive demands of explanation texts, which require logical reasoning and structured thought. Research has demonstrated that PBL significantly enhances motivation and engagement, as students perceive learning activities as meaningful and relevant to real-life contexts (Capon & Kuhn, 2014). Moreover, studies in language education indicate that PBL strengthens students' writing performance, particularly in developing coherent ideas and organizing information effectively (Jamaludin & Osman, 2014).

In addition to PBL, the integration of the Scientific Approach—a core principle of the 2013 Curriculum—further supports students' development of analytical and writing skills. This approach includes stages of observing, questioning, exploring, associating, and communicating, which collectively provide a systematic learning process that enhances comprehension and text production. International research confirms that the Scientific Approach promotes deeper engagement, critical thinking, and structured writing ability (Mustafa, 2020; Rahmawati, 2021). When combined with PBL, the approach has the potential to produce meaningful improvements in students' motivation and learning outcomes.

In light of the problems observed and the theoretical foundation supporting the use of Problem-Based Learning combined with the Scientific Approach, this study focuses on exploring two central aspects. First, the study aims to understand how the integration of the Scientific Approach with the PBL model can enhance students' interest in learning to produce explanation texts. Student interest is a crucial determinant of persistence, participation, and engagement in learning activities. Previous research indicates that PBL fosters intrinsic motivation by providing meaningful learning experiences and encouraging student autonomy (Savery, 2015; Capon & Kuhn, 2014). Thus, the study examines changes in students' enthusiasm, participation levels, and overall engagement during the learning process.

Second, the study aims to investigate how this combined instructional model can improve students' learning outcomes in producing explanation texts. Producing explanation texts requires the ability to generate ideas, organize information logically, and present causal relationships clearly. The Scientific Approach, with its emphasis on systematic inquiry and structured communication, provides a strong foundation for supporting these skills (Mustafa, 2020). When paired with the problem-solving orientation of PBL, this combined model is expected to significantly enhance students' writing proficiency. Therefore, the study focuses on identifying improvements in students' writing quality after the implementation of the model.

2. Methods

This study employed Classroom Action Research (CAR), a method aimed at improving the quality and effectiveness of classroom learning practices. CAR is conducted directly within the learning environment to identify instructional problems and implement systematic actions to enhance student outcomes. The research followed the principle that classroom-based interventions can directly improve teaching quality and student engagement.

The research design adopted a cyclical model, consisting of planning, action, observation, and reflection. Before implementing the first cycle, a pre-cycle phase was conducted to observe the initial learning conditions and administer a diagnostic test to determine students' prior knowledge of explanatory texts. The results of these observations and tests became the basis for designing the instructional intervention using the Problem-Based Learning (PBL) approach in Cycle I.

The population of this study comprised students of class XI IPS at MA Nurul Muttaqin Wedi, while the sample consisted of 15 students selected through cluster sampling. The research was conducted at MA Nurul Muttaqin, Bojonegoro, from January 12–18, 2024. Data were collected using tests (pretest and posttest), classroom observations, field notes, and documentation. The instruments used included

observation sheets, assessment guidelines, and a written test measuring students' ability to produce explanatory texts.

Data analysis employed both qualitative and quantitative techniques. Qualitative analysis was used to interpret classroom observations and student learning activities during the implementation of PBL, while quantitative analysis measured students' learning outcomes through test scores. Classical mastery learning was determined using a percentage formula, in which a minimum of 75% of students meeting the mastery criterion indicated successful learning improvement. If mastery was below 75%, the action continued to the next cycle until improvement was achieved.

3. Results and Discussion

3.1. Results

This study aimed to describe the improvement of students' interest and learning outcomes in producing explanation texts through the Scientific Approach using the Problem-Based Learning (PBL) model in Grade XII IPS at MA Nurul Muttaqin. Data were collected through pre-cycle observation, pre-cycle test, Cycle I test, and documentation. The PBL model was selected because it is proven to enhance critical thinking, problem-solving skills, and learner autonomy (Hmelo-Silver, 2004; Savery, 2015).

3.1.1. Data Description

Initial data showed that students' ability to produce explanation texts was still low, particularly in (1) formulating a general statement, (2) constructing cause–effect relations, and (3) composing interpretation sections. These findings align with Hermita & Suherdi (2019), who reported that Indonesian high school students often struggle to construct explanation texts cohesively.

3.1.2. Pre-Cycle Observation Results

Pre-cycle observations indicated that students' learning interest was low. Most students showed limited attention, low participation, and low enjoyment during the learning process.

- 87% of students were categorized as "low" in attention
- 94% were "low" in participation
- 87% were "low" in enjoyment

This suggests that conventional learning methods had not successfully engaged students. Barrows (1996) similarly found that passive learning environments reduce motivation and hinder higher-order thinking.

3.1.3. *Pre-Cycle Test Results*

The pre-cycle test consisted of five items measuring students' initial ability in producing explanation texts. The results are shown in the table below:

Table 1 - Pre-Cycle Test Results

Score	Number of Students	Percentage
0	1	6.66%
20	5	33.33%
40	4	26.66%
60	4	26.66%
80	1	6.66%
≥75 (KKM)	**1**	**6.66%**

Only 1 student (6.66%) met the minimum mastery criteria (KKM ≥75). This confirms the need for instructional intervention. These findings are consistent with Emilia & Hamied (2015), who found that students often struggle with scientific writing structures.

3.1.4. Cycle I Test Results

After implementing the PBL model in Cycle I, students' performance improved significantly. The results are shown in the following table:

Table 2 - Cycle I Test Results

Score	Number of Students	Percentage
80	7	46.66%
100	8	53.33%
≥75 (KKM)	15	100%

All students (100%) successfully achieved the KKM. This significant improvement aligns with Hung, Jonassen, & Liu (2008), who confirmed that PBL enhances reasoning, conceptual understanding, and learning outcomes.

4.2 Discussion

The implementation of this Classroom Action Research began with a comprehensive planning phase conducted collaboratively between the researcher and the partner teacher. Together, they prepared lesson plans grounded in the Scientific Approach and created instructional tools that aligned with the principles of Problem-Based Learning (PBL). The planning process also involved the development of research instruments such as PBL worksheets, observation sheets, scoring rubrics, and multiple-choice assessments. This structured preparation is consistent with Savery (2015), who emphasizes that well-designed scaffolding is essential for maximizing learners' engagement and deep understanding in PBL environments.

During the implementation phase, the lesson sequence integrated core components of both the Scientific Approach and PBL. Students participated actively in a progression of learning stages, beginning with the identification of a real-world problem and followed by systematic data collection, group-based analysis, solution development, and collaborative presentations. The cycle concluded with reflective activities in which students evaluated their learning experiences. Throughout these stages, students practiced producing explanation texts by constructing general statements, identifying logical cause–effect relationships, and composing interpretation paragraphs. These activities align with the findings of Hmelo-Silver (2004), who notes that PBL enhances students' abilities to construct conceptual understanding through inquiry and collaboration.

Evaluation procedures included structured classroom observations, written performance assessments, and guided reflections. The results showed that integrating the Scientific Approach with PBL strengthened students' skills in observing, questioning, experimenting, reasoning, and communicating ideas clearly. This improvement demonstrates the cognitive and behavioral benefits of student-centered learning models, supporting the conclusions of Schmidt et al. (2011), who found that PBL contributes significantly to students' problem-solving and self-directed learning competencies.

Reflection on Cycle I indicated that the intervention achieved substantial progress. Students demonstrated heightened interest in learning, increased proficiency in

producing explanation texts, and more active engagement during group discussions. Additionally, the learning process became more contextual and meaningful for students. Nevertheless, a number of lower-achieving students continued to require additional instructional support, aligning with the argument of Kirschner and van Merriënboer (2013), who caution that minimally guided approaches like PBL may be challenging for learners with limited prior knowledge and therefore require careful facilitation and differentiated scaffolding.

4. Conclusions

Based on the results of the analysis, several conclusions can be drawn.

First, students' learning interest in producing explanation texts—particularly in formulating general statements, organizing cause-and-effect sequences, and developing interpretations—showed a significant improvement after the implementation of the Scientific Approach integrated with the Problem-Based Learning (PBL) model. This improvement is evident from the following indicators:

- Attention during the learning process: In the pre-cycle, 87% of students demonstrated low attention during the lesson on producing explanation texts. In Cycle 1, 27% of students showed good attention, while 73% showed very good attention.
- Participation during the learning process: In the pre-cycle, 94% of students had low participation. In Cycle 1, 60% demonstrated good participation, and 40% showed very good participation.
- Positive feelings toward the learning process: In the pre-cycle, 87% of students lacked positive feelings toward the activity. In Cycle 1, 60% of students reported feeling happy, and 40% reported feeling very happy during the learning process.

Second, students' learning outcomes in producing explanation texts—formulating general statements, organizing cause-and-effect structures, and presenting interpretations—also experienced a substantial increase after applying the Scientific Approach through the PBL model. The overall mastery level in Cycle 1 reached 100%, indicating that all students achieved the minimum competency standard. These findings confirm that the Scientific Approach combined with the PBL model is effective in enhancing students' learning outcomes in producing explanation texts.

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Conflict of Interest

The authors declare no conflicts of interest.

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