



DEVELOPING THE ELEVENTH GRADERS' READING COMPREHENSION MATERIAL UTILIZING PROJECT-BASED LEARNING MODEL

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Accepted :

9 September 2025

Published :

10 September 2025

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ABSTRACT

This study developed reading comprehension materials for eleventh graders at SMA Negeri 1 Moro'o through a Project-Based Learning (PjBL) approach, emphasizing explanation texts. The research, conducted using the 4D R&D model (Define, Design, Develop, Disseminate), addressed students' challenges with limited vocabulary, complex sentence structures, and low engagement in reading. Data were collected via classroom observation, interviews, and questionnaires, followed by expert validation, product revision, small-group trials, Classroom Action Research (CAR), and evaluation. The needs analysis indicated that 78.6% of students struggled with unfamiliar vocabulary, 75% with sentence complexity, and 89.3% preferred collaborative learning. The developed materials achieved a 95% feasibility rating, while students' test scores ranged from 70–100, meeting the KKM. Learners responded positively, highlighting the materials' readability, contextual relevance, interactivity, and practicality. The product proves effective for teaching explanation texts in senior high schools and serves as a supplementary resource aligned with the 2013 Curriculum (K13). This study's originality lies in producing validated, genre-specific, and student-centered reading resources integrated with PjBL, advancing prior research by not only applying the model but also generating contextual, engaging, and innovative instructional materials that enhance comprehension and active participation.

Keywords: *Reading Comprehension, Project-Based Learning, 4D Model*

1. INTRODUCTION

Reading comprehension constitutes a fundamental skill in English language learning, as it enables students to access information, develop critical reasoning, and relate knowledge to authentic contexts. Nevertheless, a significant number of Indonesian high school learners continue to experience difficulties in processing English texts, particularly when confronted with unfamiliar vocabulary and intricate sentence structures (Sari et al., 2020; Kaforina et al., 2023; Wei, 2023). The issue is further compounded by low levels of engagement, with many students remaining passive during classroom reading activities (Sahmal, 2022;

Nayeem et al., 2025; Adhitya & Novita, 2021).

At SMA Negeri 1 Moro'o, initial observations revealed persistent challenges in vocabulary acquisition, syntactic interpretation, and active participation. These obstacles contribute to limited achievement in reading comprehension and diminished motivation to engage with English texts. Such findings resonate with previous research that underscores the urgent need for innovative pedagogical strategies to strengthen reading competence in Indonesian secondary schools (Kurniawati et al., 2023; Lestari et al., 2023; Alharbi, 2023).

The 2013 Curriculum (K13) encourages teachers to apply student-

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centered learning models that promote active engagement, collaboration, and contextual understanding. Among the suggested models, Project-Based Learning (PjBL) has gained attention for its ability to link classroom material with real-life situations while encouraging students to collaborate, solve problems, and present their work (Sartika et al., 2022; Jaya et al., 2025; Merris et al., 2021). Previous studies demonstrated that PjBL can effectively improve students' engagement and comprehension in reading activities (Lumanauw, 2022; Wiratmo et al., 2022; Poonpon, 2019). However, most of these studies only implemented PjBL as a method without systematically developing genre-based reading materials adapted to students' needs (Imbaquingo & Cárdenas, 2023; Ulyani & Jayanti, 2024; Mutanga, 2024).

This research was motivated by the gap between the existing reading materials and students' actual needs. Although teachers at SMA Negeri 1 Moro'o have already applied PjBL in classroom practices, the materials used remain general and not fully contextualized to students' interests and daily experiences. Therefore, the development of specific reading comprehension materials particularly on explanation text, which helps students understand cause-and-effect relationships, is urgently needed to enhance comprehension and engagement.

The purpose of this study is to develop reading comprehension materials for eleventh graders based on the Project-Based Learning model, designed to address students' vocabulary and structure difficulties, while also encouraging group collaboration and active participation in reading activities. This development is expected to provide more contextual, interactive, and student-centered learning resources that support English teaching within the framework of the 2013 Curriculum (K13).

2. LITERATURE REVIEW**2.1 Reading Comprehension in English Learning**

Reading comprehension is widely acknowledged as a core component of English language learning because it enables students to interpret meaning, grasp main ideas, and recognize relationships between ideas in texts (Sahmal, 2022; Mardhiyatuzakiyah et al., 2021; Sheng, 2019). However, many students face persistent challenges, particularly in mastering vocabulary and interpreting complex sentence structures. Scholars have suggested various strategies to address these difficulties. For example, Azis & Yusanti (2020) recommended text structure-based approaches to scaffold comprehension, while Sari et al. (2020) emphasized comprehension as an active process requiring cognitive and contextual involvement.

2.2 Project-Based Learning (PjBL) and Reading Comprehension

In response to these challenges, Project-Based Learning (PjBL) has been explored as a method to improve reading comprehension. Studies consistently report its effectiveness in fostering both engagement and comprehension (Jaya et al., 2025a; Fadilah et al., 2023). Lumanauw (2022) demonstrated significant improvements in junior high students' reading skills through PjBL, while Wiratmo et al. (2022) confirmed its role in enhancing reading performance and creativity. Similarly, Lestari et al. (2023) applied PjBL to report texts, showing its potential to cultivate critical thinking. These findings suggest that PjBL not only supports comprehension but also promotes higher-order thinking and collaboration.

2.3 PjBL in Broader English Learning Contexts

Beyond Indonesia, PjBL has been recognized for advancing collaborative and

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student-centered learning. Imbaquingo & Cárdenas (2023) reported that project-based tasks boosted motivation in reading classes, while Jones (in Song et al., 2024) highlighted its strength in promoting inquiry and problem-solving. Anggraini et al. (2022) further argued that PjBL bridges classroom content with real-world contexts, thereby making learning more meaningful and relevant.

2.4 Research on Reading Material Development

Efforts to integrate PjBL into material development remain limited. Lubis (2024), for instance, created reading materials using a vocabulary self-collection strategy, improving vocabulary mastery but without genre-specific focus. Likewise, Berhita et al. (2020) examined problem-based strategies yet did not design systematic materials for classroom use. These gaps highlight the need for structured, validated, and contextualized materials, particularly for genres like explanation texts, which support understanding of cause-and-effect relationships.

2.5 Curriculum Context and the Need for Innovation

The 2013 Curriculum (K13) strongly advocates student-centered and contextual learning approaches. Scholars such as Sartika et al. (2022) identify PjBL as a recommended model for fostering collaboration and critical thinking, while Kurniawati et al. (2023) emphasize the importance of adopting innovative models to improve language instruction in high schools. Despite this, most prior studies merely applied PjBL in practice, rather than systematically developing validated, genre-specific materials aligned with students' actual needs.

2.6 Implementation of PjBL in Classroom Practice

The implementation of the project activities refers to simplified PjBL steps, namely: Opening the lesson with a challenging question, planning the project, developing an activity schedule, supervising the project, and evaluation is the process or activities through project checklist sheets. At the end of the activity, students and researcher conducted a joint reflection to review their understanding and learning process (Rais in Sadaruddin et al., 2023).

- a. Opening the lesson with a challenging question: the activity begins with a guiding task or question that encourages students to engage in a simple, real-world-related project. In this case, students were asked to bring a plant or flower to class as the starting point of the project.
- b. Planning the project: the teacher introduces the project clearly, explaining its purpose, steps, and expected outcomes in a way that is easy to understand.
- c. Developing an activity schedule: students carry out the project task for example, bringing a flower or plant and then explaining it to the class. This encourages them to connect the activity with the reading material and real-life context.
- d. Supervising the project: while the project is being done, the teacher observes and supports students to ensure that they are actively engaged and following the instructions.
- e. Evaluation: at the end of the session, students and the teacher reflect briefly on the project conducted using a PjBL Model Checklist, which helps the teacher evaluate whether students' activities align with the characteristics of PjBL model.

3. METHODS

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This study employed a Research and Development (R&D) approach to design, produce, and evaluate instructional materials while testing their effectiveness. The development process followed the 4D model—Define, Design, Develop, and Disseminate originally introduced by Thiagarajan, which was deemed suitable due to its systematic structure and practical applicability (Kusmaryani & Ramli, 2023). As Kusumarasdyati (2020) highlights, the essence of R&D in education lies in fostering innovation, whether through curriculum design, instructional strategies, or technological integration.

To further refine the materials in authentic classroom settings, Classroom Action Research (CAR) was integrated into the study, consisting of iterative cycles of planning, acting, observing, and reflecting (Kemmis & McTaggart in Alek, 2016). Data analysis applied a mixed-methods approach, combining quantitative and qualitative techniques to provide complementary insights and ensure a comprehensive evaluation of both the materials' effectiveness and the learning process (Creswell & Creswell, 2018).

3.1 Materials and Instruments

The developed product was a set of Reading Comprehension Materials focusing on explanation texts, integrated with project-based activities. The material was designed using Canva software to enhance visual attractiveness and readability. Data were collected using several instruments:

- a. Observation sheets, to record students' reading skills, participation, and use of learning media (Johnson & Christensen (2014).
- b. Interview guidelines, administered to both teacher and students to identify learning difficulties and perceptions of PjBL.
- c. Questionnaires, using a four-point Likert scale to gather student responses on

readability, attractiveness, relevance, practicality, and interactivity of the developed material (Kusmaryono et al., 2022).

- d. Final evaluation, consisting of 10 multiple-choice questions to measure students' comprehension after using the material.

Material and Practitioner expert validation score; students response questionnaire were calculated using the formula:

$$\text{Mean} = \Sigma X / N$$

Where: ΣX = Total Score

N = Number of items

$$\text{Percentage} = \frac{\text{Total Score}}{\text{Maximum Score}} \times 100\%$$

3.2 Participants and Research Site

The study was conducted at SMA Negeri 1 Moro'o, involving 28 eleventh-grade students as participants. The English teacher also contributed to the interviews and product validation. Two experts (a subject matter expert and a practitioner) validated the material to ensure feasibility.

3.3 Procedure

The procedure followed the four stages of the 4D model:

- a. Define: needs analysis through classroom observation, student questionnaire, and interviews.
- b. Design: development of initial prototype including cover, objectives, explanation text, exercises, and project activities.
- c. Develop: expert validation, revision, and small group try out (6 students), followed by CAR cycles in the classroom.
- d. Disseminate: implementation of the final version in a larger class, with evaluation of student performance and responses.

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The study assumed that students had basic English knowledge but encountered challenges in vocabulary and complex sentence structures. The classroom setting was based on the 2013 Curriculum (K13), where PjBL is one of the recommended models. It was assumed that integrating contextual explanation texts with project activities would enhance students' engagement and comprehension. This method ensured that the study can be replicated under similar school conditions, using the same data collection instruments, software for design, and the 4D development framework.

4. RESULTS AND DISCUSSION

The developed reading comprehension material was validated by two experts: a material expert and a practitioner. The validation covered aspects of content, language, presentation, and design. The results indicated a very high level of feasibility, with an average score of 95%, categorized as "very feasible" as shown in table 1.

Table 1. Result of the Subject Matter Expert and Practitioner Validation

No	Aspect	Score (1-4)	
		Material Expert	Practitioner
1	Clarity of Learning Objectives	4	4
2	Readability and Language Clarity	4	4
3	Content Completeness	4	4
4	Content Structure and Flow	4	3
5	Clarity of Examples and Illustrations	4	4
6	Curriculum Alignment	4	3
7	Interactivity and Student	4	4

	Engagement		
8	Relevance to Real Life	3	4
9	Concept Understanding Ease	4	4
10	Creativity in Presentation	3	4
Total Score		38	38
Score (%)		95%	95%
Category		Very Feasible	Very Feasible

Source: Adapted from Minto, T. L. (2024).

These findings show that the material met the required criteria of feasibility and quality. Similar studies also confirmed that expert validation is crucial in ensuring material suitability before classroom implementation (Lubis, 2024; Ulyani & Jayanti, 2024). This table uses a percentage scale created by Rastavala et al. (2023). The feasibility value of reading comprehension materials products is determined as the lowest or not feasible.

Student perceptions were measured through a questionnaire administered to 28 participants after using the developed material. The results showed high positive responses across all aspects, with an average score of 92% as shown in table 2 & 3.

Table 2. Distribution of Students' Evaluation Scores

Aspect	Number of Students per Score			
	4	3	2	1
Readability of Content	19	9	0	0
Engagement of Content	16	12	0	0
Learning Support	13	15	0	0
Relevance to Student Needs	14	11	3	0
Ease of Use	24	4	0	0
Interactivity of Reading material	13	15	0	0
Practicality in Usage	17	9	2	0
Feasibility in Learning	17	11	0	0

Table 3. Distribution of Students Response Questionnaire

Aspect	Total Students	Total Score	Mean	Percentage
Readability of Content	28	103	3.68	100%
Engagement of Content	28	100	3.57	100%
Learning Support	28	97	3.46	100%
Relevance to Student Needs	28	95	3.39	89.30%
Ease of Use	28	108	3.86	100%
Interactivity of Reading Material	28	97	3.46	100%
Practicality in Usage	28	99	3.54	92.90%
Feasibility in Learning	28	101	3.61	100%

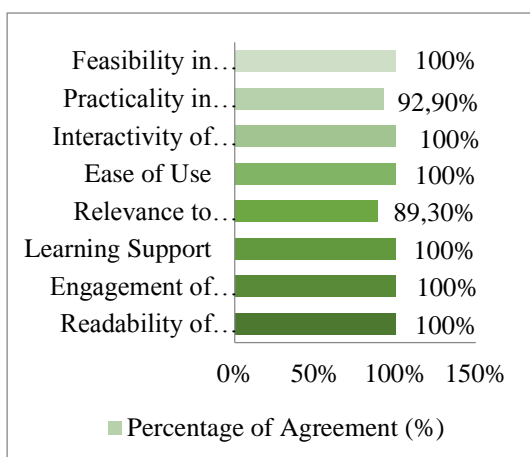


Figure 1. Students' Agreement Percentage

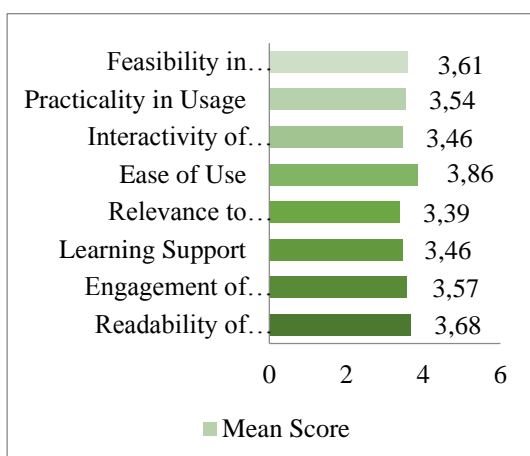


Figure 2. Mean Score per Aspect

engaging, relevant, and practical. This result is in line with Imbaquingo & Cárdenas (2023) and Lestari et al. (2023), who noted that project-based activities enhance students' motivation and improve their perceptions of English learning materials, as illustrated in Figures 1 and 2.

The material's effectiveness was further evaluated through a final test comprising 10 multiple-choice items. Students' scores ranged between 70 and 100, with all learners successfully meeting or exceeding the minimum mastery criterion (KKM = 70). These outcomes demonstrate that the material effectively enhanced students' reading comprehension, echoing the findings of Lumanauw (2022) and Wiratmo et al. (2022), who reported that PjBL fosters both comprehension and engagement in reading activities.

Overall, the study confirmed that systematically developed PjBL-based materials could overcome common challenges related to vocabulary mastery, sentence structure, and participation. Expert validation verified their high feasibility, while students' feedback highlighted practicality and engagement. Most importantly, test results provided clear evidence of effectiveness in achieving learning targets.

These results reinforce earlier research on the benefits of PjBL in supporting collaborative and contextual learning (Sartika et al., 2022; Kurniawati et al., 2023). Nevertheless, the distinct contribution of this study lies in embedding PjBL within genre-based reading materials specifically explanation texts which remain underexplored in prior studies. Thus, this research not only advances material development but also offers practical insights for teachers and curriculum designers in creating contextual, interactive, and learner-centered resources.

The findings revealed that the developed material was considered readable,

5. CONCLUSION

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This research was conducted to develop reading comprehension materials for eleventh graders by integrating the Project-Based Learning (PjBL) model, with a particular emphasis on explanation texts. The study employed the 4D development model in conjunction with Classroom Action Research (CAR) to achieve its objectives. Needs analysis revealed that students faced major obstacles in vocabulary mastery, understanding sentence structures, and maintaining active participation during reading activities. To address these issues, the developed materials incorporated contextual themes and project-oriented tasks. Expert validation confirmed their high feasibility, scoring 95%, while student feedback indicated very positive perceptions of readability, attractiveness, relevance, practicality, interactivity, and overall feasibility, with an average score of 92%. Furthermore, the effectiveness test showed that all students successfully exceeded the minimum mastery standard (KKM), signifying that the materials were valid, practical, and effective in enhancing comprehension and engagement.

Implications of the study suggest that genre-specific, project-based materials can substantially improve reading achievement by providing authentic, collaborative, and student-centered learning experiences. Such materials not only align with the demands of the 2013 Curriculum but also empower teachers with resources that promote critical thinking, contextual understanding, and learner autonomy.

Recommendations for future research include expanding the development to other genres such as narrative or argumentative texts, applying the model in diverse school contexts to ensure broader applicability, and integrating digital-based project activities to strengthen interactivity. Longitudinal studies could also be conducted to investigate the sustained impact of PjBL-based reading materials on students' literacy development and critical thinking skills.

6. ACKNOWLEDGEMENT

The researcher would like to thank the Rector of Universitas Nias, the Dean of the Faculty of Teacher Training and Education, the Headmaster of SMA Negeri 1 Moro'o, and the English teachers and students who participated in this study. Special gratitude is also extended to family and colleagues for their support.

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