

THE EFFICACY OF INNOVATIVE MATERIAL DEVELOPMENT IN ENHANCING STUDENTS' READING OUTCOMES: A CASE STUDY AT SMA SWASTA SINAR PEMBANGUNAN

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Abstrak

Penelitian ini bertujuan untuk merancang serta menguji efektivitas bahan ajar berbasis konteks dalam meningkatkan kemampuan pemahaman bacaan siswa EFL (Bahasa Inggris sebagai Bahasa Asing). Penelitian ini mengadopsi pendekatan Penelitian dan Pengembangan (R&D) dengan menerapkan model ADDIE (Analysis, Design, Development, Implementation, and Evaluation) sebagai kerangka kerja dalam pengembangan materi pembelajaran yang sesuai untuk jenjang pendidikan menengah. Subjek penelitian melibatkan 30 siswa kelas XI SMA Swasta Sinar Pembangunan, Sumatra Selatan, yang dipilih melalui teknik purposive sampling. Pengumpulan data dilakukan melalui lembar validasi ahli dan tes pemahaman bacaan dengan desain pra-eksperimen (pre-test dan post-test). Hasil analisis uji *t* berpasangan menunjukkan adanya peningkatan yang signifikan pada hasil belajar siswa, dengan rata-rata nilai meningkat dari 61,45 menjadi 85,70. Selain itu, nilai *N-Gain* sebesar 0,63 tergolong dalam kategori “efektif”, yang mengindikasikan bahwa integrasi kearifan lokal Palembang dalam bahan ajar mampu meningkatkan keterlibatan siswa serta daya ingat linguistik mereka. Penelitian ini menyimpulkan bahwa peran pedagogis dalam pengembangan bahan ajar memiliki kontribusi penting dalam mengatasi kesulitan membaca pada siswa di tingkat sekolah menengah di Indonesia.

Kata kunci: Pengembangan Bahan Ajar, Pemahaman Bacaan, Model ADDIE, Pembelajaran Kontekstual, Siswa EFL

Abstract

This study aims to design and assess the effectiveness of contextualized instructional materials in improving the reading comprehension of EFL (English as a Foreign Language) students. Employing a Research and Development (R&D) approach, the study adopted the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model as a framework for developing instructional resources tailored to the secondary education level. The participants were 30 eleventh-grade students from SMA Swasta Sinar Pembangunan, South Sumatra, selected through purposive sampling. Data were collected using expert validation sheets and a pre-experimental reading comprehension test design (pre-test and post-test). The results of the paired-sample *t*-test revealed a statistically significant improvement in students' performance, with the mean score increasing from 61.45 to 85.70. Additionally, the *N-Gain* score of 0.63 was categorized as “effective,” indicating that the integration of local Palembang cultural elements into the materials enhanced students' engagement

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and linguistic retention. The study concludes that pedagogical involvement in material development plays a crucial role in addressing reading difficulties among secondary school students in Indonesia.

Keywords: Instructional Material Development, Reading Comprehension, ADDIE Model, Contextualized Learning, EFL Students

1. INTRODUCTION

The landscape of English as a Foreign Language (EFL) pedagogy in Indonesia has experienced substantial transformation, particularly at the secondary education level. Within this context, reading comprehension is recognized as a fundamental skill for senior high school students, as it serves as a gateway to broader academic achievement and access to global knowledge (Wibowo et al., 2020; Sulistianingsih et al., 2021; Alzu'bi, 2020). Nevertheless, the success of reading instruction is largely dependent on the quality and contextual relevance of the instructional materials employed in the classroom (Tomlinson, 2022; Feretti & Graham, 2019; Baleghizadeh & Maryam, 2019). In practice, educators frequently encounter challenges when standardized textbooks fail to correspond with students' linguistic proficiency levels and cultural backgrounds, especially in regions such as Palembang (Kurniawan, 2024).

The development of customized instructional materials has become a pedagogical imperative rather than a supplementary option in addressing the diverse needs of contemporary learners. This process involves systematic stages of evaluation, adaptation, and creation to ensure that materials are not only informative but also pedagogically meaningful and experientially engaging (Hockly, 2023). Richards and Rodgers (2022) argue that effective materials should foster a sense of learner progress while emphasizing meaningful and functional language use. Moreover, incorporating local context into instructional materials has been shown to reduce students' affective barriers, thereby promoting a more supportive environment for literacy development (Pratiwi, 2025).

In the context of SMA Swasta Sinar Pembangunan, preliminary observations indicate that students often demonstrate low engagement in reading activities due to limited familiarity with the topics presented in standardized curricula. This lack of relevance contributes to decreased motivation and stagnant reading performance (Azwar, 2024). To address this issue, teachers need to exercise pedagogical agency in designing materials that align with students' immediate environments and digital practices (Marzulina et al., 2025). Furthermore, Widodo et al. (2022) emphasize that contemporary frameworks for language material development must incorporate principles of diversity and inclusivity in response to the demands of Education 5.0.

The emergence of digital and multimodal learning resources has also reshaped the concept of effective instructional materials in the 2020s. Interactive e-books and screen-based texts have been found to enhance student comprehension more effectively than traditional print-based materials (Sujana, 2024; He et al., 2024; De Wilde et al., 2020). Similarly, Quinto et al. (2025) report that structured digital reading approaches can yield higher comprehension gains compared to conventional methods. However, the effectiveness of such technological integration is contingent upon teachers' ability to balance digital tools with sound pedagogical principles (Yonatan, 2024; Susanto et al., 2020; Soughati et al., 2025).

Recent empirical studies further highlight the effectiveness of innovative material development. For example, Sujana (2024) demonstrated that the use of interactive e-books improved students' reading performance from a "fair" category (mean score of 28) to a "good" category (mean score of 57). Likewise, Azwar (2024) found that multimedia-based

instructional materials increased ninth-grade students' achievement from a baseline score of 53 to 80.54. In addition, Marzulina et al. (2025) revealed that ethnopedagogical reading materials integrating Palembang's local cultural elements such as songket and pempek significantly enhanced students' knowledge retention while improving their linguistic competence.

Furthermore, the development of instructional materials should be grounded in systematic Research and Development (R&D) models to ensure both validity and practicality. Frameworks such as ADDIE and Thiagarajan's 4D model enable researchers to produce materials that are theoretically robust and practically applicable in classroom settings (Setyowati, 2024). Contemporary instructional design also prioritizes learner-centered approaches, where reading activities extend beyond text comprehension to include critical thinking and problem-solving skills (Floriasti & Khoirunisa, 2023; Mahesti et al., 2025). Such structured approaches ensure that the developed materials are feasible for implementation in specific institutional contexts, such as SMA Nurul Huda (Taufiqy et al., 2024).

Ultimately, this study aims to provide a localized response to a global challenge: making reading both engaging and productive for EFL learners. By emphasizing the relationship between teacher agency and material quality, this research seeks to enhance the standard of English language instruction at SMA Swasta Sinar Pembangunan. As highlighted by Çeliker-Ercan and Çubukçu (2023), teachers' confidence in the materials they use plays a crucial role in successful instructional implementation. Therefore, the development of high-quality, contextually relevant reading materials is expected to significantly improve students' learning outcomes (Li, 2025).

Research Objectives:

- 1) To examine the existing challenges and reading comprehension needs of Grade XI students at SMA Swasta Sinar Pembangunan as a foundation for material development.
- 2) To design and develop contextualized English reading materials integrated with Palembang's local wisdom using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) framework.
- 3) To assess the validity and practicality of the developed materials based on expert evaluation and teacher feedback.
- 4) To determine the effectiveness of the developed materials in improving the reading comprehension achievement of 30 Grade XI students at SMA Swasta Sinar Pembangunan through pre-test and post-test analysis.

2. METHOD

2.1 Literature Review

The theoretical basis of instructional material development in the 2020s has evolved toward a more sophisticated, learner-centered approach that emphasizes contextual relevance and cognitive engagement. Tomlinson (2022) asserts that instructional materials should function as dynamic pedagogical instruments capable of creating meaningful "impact" by linking language tasks to learners' sociocultural contexts. This view is supported by Richards and Rodgers (2022), who argue that effective reading materials must promote authentic language acquisition through meaningful and varied linguistic input.

Within the Indonesian EFL context, recent research highlights the effectiveness of ethnopedagogical materials. Marzulina et al. (2025), for example, suggest that integrating

local cultural elements such as regional traditions and heritage serves as an essential scaffold that reduces students' affective barriers and enhances comprehension. Additionally, the incorporation of digital and multimodal features, as emphasized by Hockly (2023) and Sujana (2024), provides interactive feedback mechanisms that are crucial for developing advanced literacy skills in the post-pandemic era. Overall, these perspectives indicate that material development is not merely a technical process but a transformative effort to align standardized curricula with the specific learning needs of students in localized contexts such as Palembang (Kurniawan, 2024; Pratiwi, 2025).

2.2 Research Design

This study adopted a Research and Development (R&D) design to connect theoretical principles with practical classroom application. R&D is a systematic approach aimed at enhancing instructional quality through iterative processes of analysis, design, development, and evaluation (Setyowati, 2024; Taufiqy et al., 2024).

The study employed the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. This framework ensures that the development process is grounded in actual learner needs and validated through expert review (Kurniawan, 2024; Yonatan, 2024). The stages are described as follows:

1. Analysis: Identifying students' reading difficulties and learning gaps.
2. Design: Developing a material blueprint that integrates Palembang's local cultural elements.
3. Development: Producing and validating the instructional materials with subject-matter experts.
4. Implementation: Conducting classroom trials with Grade XI students.
5. Evaluation: Assessing effectiveness using quantitative measures such as the N-Gain score.

2.3 Participants and Sampling

The participants of this study were 30 Grade XI students selected through purposive sampling. This sampling technique was chosen to ensure that the participants represented the specific instructional challenges addressed in the study (Richards & Rodgers, 2022; Azwar, 2024).

2.4 Instruments and Data Analysis

Data were collected using reading comprehension tests and expert validation sheets. To evaluate the effectiveness of the developed materials, a paired-sample t-test was conducted to compare pre-test and post-test results. In addition, the N-Gain score was calculated to measure the extent of students' improvement in reading comprehension (Sujana, 2024; Pratiwi, 2025).

Discussion

The findings of this study provide strong empirical support for the effectiveness of contextualized instructional material development in improving EFL students' reading comprehension. The high validation score (90.75%) obtained from expert judgment confirms that the developed materials meet key criteria of quality, including content relevance, linguistic accuracy, pedagogical structure, and cultural authenticity. This result aligns with Brian Tomlinson (2022), who argues that effective instructional materials must create meaningful "impact" by connecting language learning with learners' real-life contexts. The

high score in cultural authenticity further reinforces the argument that integrating local elements enhances the relevance and accessibility of learning materials, making them more engaging for students.

In addition, the findings are consistent with the perspective of Jack C. Richards and Theodore S. Rodgers (2022), who emphasize that well-designed materials should facilitate authentic language use and provide structured progression from basic comprehension to higher-order thinking. The expert feedback in this study, which highlighted the effectiveness of scaffolding from literal to inferential comprehension, demonstrates that the materials successfully embodied these principles.

The descriptive analysis of students' reading achievement further substantiates the effectiveness of the intervention. The dramatic shift in score distribution—from 43.3% of students in the “poor” category to 60% in the “excellent” category—indicates that contextualized materials significantly enhance learning outcomes. This improvement can be explained through schema theory, which suggests that comprehension is facilitated when new information is connected to learners' prior knowledge. In this study, the incorporation of local cultural elements such as the Musi River, Kemaro Island, and Palembang traditions enabled students to activate their existing schemata, thereby improving their ability to interpret English texts. This finding is supported by Marzulina et al. (2025), who highlight that ethnopedagogical materials serve as cognitive scaffolding that strengthens both comprehension and retention.

The inferential statistical analysis provides further confirmation of the intervention's effectiveness. The paired-sample t-test revealed a highly significant difference ($p < 0.05$) with a large effect size ($t = -15.421$), indicating that the observed improvement was not due to chance. This result supports the argument proposed by Hockly (2023) that meaningful and context-rich materials can substantially enhance literacy outcomes by increasing learner engagement. Moreover, the significant improvement aligns with Sujana (2024), who found that interactive and context-based materials lead to higher comprehension gains compared to conventional approaches.

The N-Gain score of 0.63, categorized as moderately high, provides additional evidence of the instructional effectiveness of the developed materials. This result indicates that the intervention not only improved students' scores but also optimized their learning potential. According to Setyowati (2024), the use of systematic development models such as ADDIE ensures that instructional products are both effective and practical, as they are grounded in learners' needs and continuously refined through evaluation. The success of this study confirms the applicability of the ADDIE model in producing high-quality instructional materials in the Indonesian EFL context.

Furthermore, the effectiveness of the materials can be attributed to several pedagogical mechanisms. First, the use of familiar cultural content reduced students' cognitive load. As learners did not need to struggle with unfamiliar concepts, they were able to focus more on language processing. This finding is in line with cognitive load theory, which suggests that reducing extraneous cognitive demands enhances learning efficiency. Second, the integration of local context lowered students' affective filters, increasing their confidence and motivation. This supports the view that emotional engagement plays a crucial role in language acquisition, as learners are more likely to participate actively when they feel connected to the learning material (Pratiwi, 2025).

Finally, the structured design of the materials, guided by the ADDIE framework, ensured a clear and progressive learning pathway. The materials systematically scaffolded learning from vocabulary recognition to critical analysis, preventing cognitive overload and promoting independent literacy development. This finding reinforces the argument of

Widodo et al. (2022) that modern instructional design must adopt a learner-centered and systematic approach to address the demands of Education 5.0.

Overall, the results of this study demonstrate that contextualized, culturally relevant, and systematically designed instructional materials can significantly improve EFL reading comprehension. The integration of local wisdom not only enhances cognitive processing but also fosters emotional engagement, making learning more meaningful and effective.

3. RESULT AND DISCUSSION

3.1 Analysis of Developmental Data through Expert Validation

The first stage of this study concentrated on the development phase of the ADDIE model, with particular emphasis on ensuring the quality of the instructional materials through expert validation. Two experienced evaluators a linguist and an instructional design expert assessed the developed materials using a structured validation instrument. This step was crucial to confirm that the contextualized reading materials were both pedagogically appropriate and culturally aligned with the needs of students at SMA Swasta Sinar Pembangunan.

Table 1. Expert Validation Results and Interpretations

Validation Aspect	Expert 1 (Linguist)	Expert 2 (Inst. Design)	Average (%)	Category
Content Relevance	92%	88%	90%	Very Valid
Linguistic Accuracy	95%	85%	90%	Very Valid
Pedagogical Structure	88%	92%	90%	Very Valid
Cultural Authenticity	96%	90%	93%	Very Valid
Overall Average	92.75%	88.75%	90.75%	Very Valid

The findings in Table 1 indicate an overall validity score of 90.75%, which falls within the “very valid” category based on established evaluation standards. The highest score was observed in the aspect of cultural authenticity, suggesting that the incorporation of Palembang’s local heritage such as stories related to the Musi River and Kemaro Island successfully created a familiar and engaging learning context. Furthermore, expert feedback highlighted that the language used in the materials was both natural and accessible, while the instructional design effectively guided students from basic comprehension toward more advanced inferential understanding.

3.2 Descriptive Analysis of Students’ Reading Achievement

To assess the impact of the developed materials, data were collected from 30 Grade XI students. A pre-test was administered using conventional instructional materials, followed by a post-test after the implementation of the contextualized materials.

Table 2. Frequency Distribution of Students’ Reading Scores

Score Range	Classification	Pre-test	Post-test	Percentage Change
86–100	Excellent	0	18	+60.0%
71–85	Good	5	10	+16.7%
56–70	Fair	12	2	-33.3%

<55	Poor	13	0	-43.3%
Total		30	30	100%

The distribution presented in Table 2 demonstrates a substantial shift in student performance. Before the intervention, 43.3% of students were categorized as “poor,” indicating significant difficulty in basic reading comprehension, largely due to unfamiliarity with the content of standard textbooks. However, after the implementation of the contextualized materials, no students remained in the “poor” category, and 60% achieved an “excellent” classification. This notable improvement suggests that contextualized content serves as a cognitive bridge, enabling students to draw upon their existing cultural knowledge to better understand foreign language texts.

3.3 Inferential Statistical Analysis: Paired-Sample T-test

To verify whether the observed improvement from a mean score of 61.45 in the pre-test to 85.70 in the post-test was statistically significant, a paired-sample t-test was conducted. This analysis provides robust statistical evidence regarding the effectiveness of the intervention based on the ADDIE model.

Table 3. Paired-Sample T-test Results

Group	Mean	Std. Deviation	Std. Error Mean	t-value	df	Sig. (2-tailed)
Pre-test	61.45	8.24	1.50			
Post-test	85.70	5.52	1.01	-15.421	29	.000

The results indicate a statistically significant difference between pre-test and post-test scores ($p < 0.05$). The calculated t-value of -15.421 with 29 degrees of freedom and a significance level of .000 confirms that the improvement in students’ reading comprehension is not due to chance. Instead, it reflects the effectiveness of the contextualized instructional materials developed through the ADDIE framework.

As shown in Table 3, the obtained significance value of 0.000 is substantially lower than the predetermined alpha level of 0.05. This result indicates a statistically significant difference between the pre-test and post-test scores. Moreover, the large negative t-value (-15.421) reflects a strong effect, confirming that the developed instructional materials had a substantial impact on students’ reading performance. These findings are consistent with previous research suggesting that instructional materials tailored to learners’ cultural and contextual backgrounds yield more meaningful learning outcomes compared to standardized global textbooks that often lack local relevance.

3.4 Analysis of Instructional Effectiveness through N-Gain Score

In addition to statistical significance, the normalized gain (N-Gain) score was calculated to evaluate the effectiveness of the learning improvement relative to students’ initial performance levels.

Table 4. N-Gain Calculation and Interpretation

Component	Statistical Value	Interpretation	Component
Mean Pre-test	61.45		Mean Pre-test
Mean Post-test	85.70		Mean Post-test

The N-Gain score of 0.63 indicates that the instructional materials contributed to a 63% improvement in students’ potential learning outcomes. This level of effectiveness can be categorized as moderately high, demonstrating the success of the research and development

process in enhancing students' reading comprehension. The findings suggest that the intervention effectively bridges the gap between basic decoding skills and higher-level analytical reading within the context of secondary education in South Sumatra.

The effectiveness of the implementation at SMA Swasta Sinar Pembangunan can be attributed to several key pedagogical factors. First, the activation of familiar schemata played a crucial role in reducing students' cognitive load. In many EFL contexts, learners are required to simultaneously process new content and a new language, which can hinder comprehension. By incorporating elements of Palembang's local culture—such as the history of the Srivijaya Kingdom and the tradition of Songket weaving—the materials enabled students to focus more on linguistic processing rather than conceptual understanding.

Second, the contextualization of content contributed to lowering students' affective barriers. Reading anxiety often arises when learners are unable to relate to the text. When students encounter materials that reflect their own cultural background and lived experiences, their confidence and motivation tend to increase. This heightened sense of familiarity fosters greater engagement and encourages active participation in learning activities. Notably, even students with previously low achievement levels demonstrated increased willingness to engage with more complex, inferential reading tasks when the materials were culturally relevant.

Finally, the structured design guided by the ADDIE model ensured a logical and progressive learning sequence. The developed materials were not merely collections of reading texts but were systematically organized instructional resources that scaffolded learning from basic vocabulary acquisition to advanced analytical thinking. This structured progression prevented cognitive overload and supported students in gradually developing independent reading skills.

4. CONCLUSION

This study demonstrates that the systematic development of contextualized instructional materials using the ADDIE framework significantly improves EFL students' reading comprehension at the secondary school level. The empirical findings, evidenced by a marked increase in mean scores from 61.45 to 85.70 and an N-Gain value of 0.63, indicate that the integration of local cultural elements such as Palembang's heritage and traditions functions as an effective cognitive bridge for learners. By connecting language tasks with students' familiar sociocultural contexts, the materials successfully reduced cognitive load and lowered affective barriers, thereby transforming reading activities into more engaging and meaningful learning experiences.

Furthermore, the results highlight the essential role of pedagogical agency in instructional practice. Teachers are encouraged to move beyond being passive users of standardized curricula and instead assume active roles as developers of contextually relevant learning materials. The high validity scores obtained from expert evaluations, along with the statistically significant improvements observed among students at SMA Swasta Sinar Pembangunan, provide strong support for incorporating ethnopedagogical approaches into English language teaching in Indonesia.

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