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Development of Indonesian Teaching Module Based on the Scientific Approach for Procedure Text Material at SMK Negeri Hulu Gurung

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ABSTRACT

This study developed and evaluated an Indonesian language teaching module based on the scientific approach for procedure text material in Grade X at SMK Negeri Hulu Gurung. The researchers used Research and Development with the ADDIE model, covering analysis, design, development, implementation, and evaluation, and combined qualitative and quantitative data from observation, interviews, expert validation, user-response questionnaires, and pretest-posttest learning achievement tests. The product trial involved 27 Grade X Multimedia students. The module obtained validation scores of 93.68% from the material expert and 100.00% from the language expert. Practicality reached 96.00% based on the teacher response and 87.21% based on student responses. In the one-group pretest-posttest trial, the mean learning score increased from 52.35 to 93.58, classical mastery reached 100%, and the N-gain score was 0.85 in the high category. These results indicate that the module is highly valid and practical and produced a strong preliminary learning gain in the tested class. Because the trial used a single group without a control group, the findings should not be interpreted as evidence that the module is superior to alternative teaching materials.
Keywords: Teaching Module, Scientific Approach, Procedure Text

INTRODUCTION

Indonesian language learning in vocational high schools is expected to develop language competence, systematic thinking, and practical communication skills that relate to students' fields of expertise. Procedure text material is directly connected with these goals because students must arrange instructions in a sequential, logical, and accurate form. However, procedure text learning at SMK Negeri Hulu Gurung still faced limitations in the availability of structured teaching materials. Teachers relied mainly on textbooks and worksheets, while classroom instruction often used lectures. These conditions reduced students' opportunities to learn actively and independently.

A needs analysis through classroom observation, teacher interviews, and a review of learning tools showed three main problems. First, the existing learning tools had not fully supported the student-centered orientation of the *Merdeka*Curriculum. Second, many Grade X students could identify examples of procedure texts but had difficulty developing complete texts independently and using the appropriate structure and language features. Third, approximately 65% of students had not achieved the Minimum Mastery Criterion of 75 for procedure text material. The reasoning and communicating stages of learning also had not been implemented optimally.

The scientific approach provides a relevant response to these conditions. It guides learning through observing, questioning, collecting information, reasoning, and communicating. These stages support students in examining text examples, identifying structures and language rules, organizing information, developing logical steps, and presenting the resulting text. Hakim and Rahayu (2019) emphasized that scientific learning supports critical, logical, and systematic thinking, while Uli and Lizawati (2019) showed that observation-based learning can strengthen critical thinking through fact-based learning experiences.

Project-based learning (PjBL) and problem-based learning (PBL) are also relevant for vocational education because they can connect language learning with projects and authentic problems. For example, Antika and Asfina (2023) designed a PBL module around occupational needs in naval architecture, while Syafiqri (2025) reported positive vocational-student experiences with PjBL in writing instruction. The present study does not assume that the scientific approach is universally superior to PjBL or PBL. Rather, it was selected because the identified learning problem required explicit, step-by-step scaffolding from observing a model text to questioning its features, collecting information, reasoning about the sequence, and communicating a completed procedure text. This sequence is particularly aligned with students who could recognize examples but still struggled to construct complete procedure texts independently.

Teaching modules can integrate these scientific stages into a complete and systematic learning sequence. Salsabilla et al. (2023) explained that *Merdeka* Curriculum modules organize learning components to guide competency attainment. Contextual modules are also important in vocational education because students need learning materials that connect language tasks with their fields of expertise. Studies in INTERACTION similarly emphasize occupational relevance and contextualization in technical and vocational modules (Antika & Asfina, 2023; Elia et al., 2025; Ismail et al., 2025).

Based on these problems, this study developed an Indonesian language teaching module based on the scientific approach for procedure text material in Grade X at SMK Negeri Hulu Gurung. The study focused on the module development process, validity, practicality, and preliminary learning outcomes. Its novel contribution is the integration of the five scientific stages with *Merdeka*Curriculum-oriented procedure-text learning for Grade X vocational students in the Hulu Gurung school context, where structured teaching materials were limited. The product was also intended to be contextualized to the learning environment of Multimedia students rather than functioning as a generic procedure-text module.

LITERATURE REVIEW

Previous Related Study

Previous development studies support the use of systematic and contextual learning materials. Marliansya et al. (2023) developed Android-based digital pocketbook learning media for vocational students and reported favorable expert-validation results. Hijrah and Hafid (2024) developed an ADDIE-based teaching module and used subject and language experts as part of product validation. Antika and Asfina (2023) designed a problem-based module that linked English learning to the occupational needs of naval-architecture students. Ismail et al. (2025) emphasized contextual digital materials for vocational culinary and tourism programs, while Elia et al. (2025) highlighted the relevance and workplace applicability of a contextual module for informatics students. Syafiqri (2025) further showed how PjBL can be integrated with writing instruction in a vocational high school. In Indonesian procedure-text learning, Kormasela et al. (2020) showed the importance of contextual teaching materials that connect writing tasks with learners' familiar environments.

The present study differs from these studies in target users, language, material, and instructional structure. It focuses on Grade X vocational high school students, develops an Indonesian-language module for procedure text, aligns the product with the *Merdeka*Curriculum, and embeds observing, questioning, collecting information, reasoning, and communicating into the learning sequence. In addition, the study addresses a Hulu Gurung vocational-school context and evaluates the product through expert validation, teacher and student practicality responses, and a preliminary one-group learning trial.

Scientific Approach

The scientific approach organizes learning through observing, questioning, collecting information, reasoning, and communicating. In procedure text learning, observing involves examining model texts; questioning involves identifying issues related to text structure and language; collecting information involves exploring relevant learning sources; reasoning involves arranging instructions logically; and communicating involves presenting the completed text. Cahyani and Eska (2021) reported positive outcomes from a scientific-based Indonesian learning module, while Hakim and Rahayu (2019) and Uli and Lizawati (2019) emphasized the role of scientific and observation-based activities in supporting systematic and critical thinking. The approach therefore provides a structured bridge between conceptual understanding and the practical process of producing procedure texts.

Teaching Module

A teaching module is a structured learning tool that includes objectives, learning materials, activities, exercises, and evaluation. It allows students to follow a planned learning sequence and supports independent study. Salsabilla et al. (2023) stressed systematic competency-oriented organization in *Merdeka*Curriculum modules. Hariyadi and Ramaniyar (2021) also emphasized the importance of appropriate content, language, presentation, and readability in textbook development. In vocational contexts, contextual relevance is equally importantbecause technical or workplace-related examples can make language tasks more meaningful (Elia et al., 2025; Ismail et al., 2025).

Procedure Text

Procedure text explains the steps required to complete an activity accurately. Kosasih (2017) described its main elements as the purpose, ordered steps, and a closing component when needed. Its language features include imperative sentences, action verbs, temporal conjunctions, and precise vocabulary. These features make procedure text especially relevant for vocational students, who frequently work with practical instructions and operational sequences.

METHOD

Design and Samples

This research used Research and Development with the ADDIE model, consisting of analysis, design, development, implementation, and evaluation. A mixed methods approach was used: qualitative data described learning needs, classroom conditions, and expert suggestions, while quantitative data described validity, practicality, and learning achievement. The product trial involved 27 Grade X Multimedia students at SMK Negeri Hulu Gurung, selected purposively based on the characteristics and learning needs of the target class. The learning-outcome component used a pre-experimental one-group pretest-posttest design. This design can describe within-group change after module use, but it cannot isolate the module effect from other uncontrolled influences; therefore, the learning-outcome findings are interpreted as preliminary trial evidence rather than definitive comparative effectiveness.

Instrument and Procedure

The instruments consisted of observation and interview guides, document-review notes, expert-validation sheets, teacher and student response questionnaires, and learning-achievement tests. The validation panel consisted of one material expert and one language expert. The material rubric covered curriculum alignment, conceptual accuracy, completeness, presentation, and integration of the scientific approach. The language rubric covered sentence structure, word choice, readability, language accuracy, and clarity of instructions. The response questionnaires measured ease of use, clarity, attractiveness, and usefulness, while the pretest and posttest measured achievement before and after module use. Because only one expert represented each validation domain, the resulting percentages should be interpreted as criterion-based expert judgments rather than broad inter-rater consensus. The 100.00% language score therefore indicates complete agreement with the listed rubric criteria by that validator, not a population-level estimate of measurement precision.

The available study records identify the validators only by their validation roles, namely one material expert and one language expert; detailed academic credentials, institutional affiliations, and specific areas of expertise were not documented. Accordingly, the validation results are interpreted cautiously as criterion-based judgments from two individual validators rather than as evidence from a broad expert panel. Separate empirical item-validity and reliability analyses for the pretest-posttest learning-achievement instrument were not documented in the available study records. Therefore, the learning-outcome findings are treated as preliminary evidence, and the absence of reported item-level psychometric evidence is acknowledged as a measurement limitation.

During the analysis stage, the researcher identified curriculum demands, learning problems, student characteristics, and teaching-material needs. During design, the researcher arranged learning objectives, user instructions, procedure-text content, five-stage scientific activities, exercises, and evaluations. During development, the draft module was produced, validated, and revised. During implementation, the module was used with the trial class. During evaluation, the researcher analyzed expert validation, user responses, pretest-posttest descriptive results, classical mastery, and N-gain.

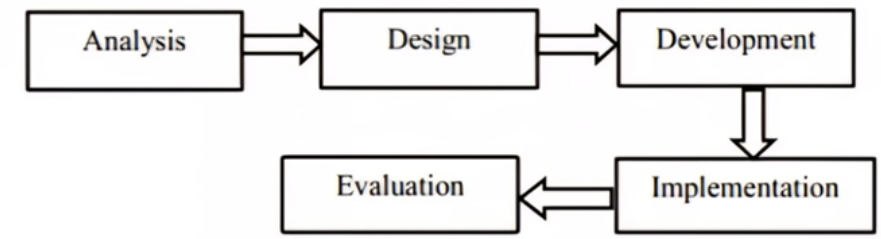


Figure 1. Stages of the ADDIE Development Model (Sugiyono, 2024)

Data Analysis

Validity and practicality were calculated with the formula percentage = (obtained score / maximum score) x 100%. Effectiveness-related trial outcomes were summarized through pretest and posttest descriptive statistics, classical mastery, and N-gain, where N-gain = (posttest score - pretest score) / (maximum score - pretest score). An exact paired-samples t-test requires the 27 within-student score pairs. Because the available study records contain only aggregate pretest and posttest summaries rather than the individual paired scores, an exact paired-samples t statistic and 95% confidence interval could not be recalculated for this revision. Accordingly, the learning-outcome interpretation is limited to the reported descriptive change, classical mastery, and N-gain.

RESULT AND DISCUSSION

Module Development Process

The analysis stage confirmed the need for a structured teaching module aligned with the learning needs of the target class. Existing materials had not fully guided the five scientific stages, and students still struggled to organize procedure texts logically. The design stage produced a module framework containing objectives, instructions, material, five-stage learning activities, exercises, and evaluation. The development stage transformed the framework into a complete module and included expert validation and revision. The implementation stage involved 27 Grade X Multimedia students, while the evaluation stage examined validity, practicality, and preliminary learning-outcome data.

The learning sequence begins with observing examples of procedure texts. Students then formulate questions about purpose, structure, and language features, collect information from learning sources, reason by arranging a logical outline and sequence, and communicate the completed text for feedback. The module was developed for Grade X Multimedia students, and the scientific stages were organized to support procedure-text production in that target class. However, the available manuscript documentation does not reproduce specific field-based procedure-text excerpts from the final module; therefore, claims about direct Multimedia-specific contextualization are interpreted cautiously. The absence of representative Multimedia-oriented task excerpts in the available documentation limits direct evaluation of vocational contextualization. Future product reporting should reproduce several actual module tasks or procedure-text topics and show explicitly how each task moves through observing, questioning, collecting information, reasoning, and communicating.

Validity of the Teaching Module

Table 1. Teaching Module Validation Results

Validator	Obtained Score	Maximum Score	Percentage	Category
Material expert	89	95	93.68%	Very valid
Language expert	50	50	100.00%	Very valid
Average	-	-	96.84%	Very valid

Table 1 shows an average validity score of 96.84%, which falls in the very valid category. The material expert score of 93.68% indicates favorable criterion-based judgments of content, presentation, learning activities, and integration of the scientific approach. The language expert score of 100.00% indicates that the single language validator marked all assessed criteria as fulfilled for readability, sentence clarity, word choice, language accuracy, and clarity of instructions. Because each domain was represented by only one expert, these percentages should not be interpreted as evidence of inter-rater reliability or universal agreement. Although the module achieved a very valid result, the validators suggested editorial and instructional improvements. The main revision involved a clearer explanation of the five scientific stages. The researcher also refined wording and presentation to improve readability and organization. These revisions strengthened the final product without changing its main content.

Table 2. Revision Based on Validator Input

Validator	Input	Follow-up
Material expert	Add a clearer explanation of observing, questioning, collecting information, reasoning, and communicating.	The researcher added detailed explanations of the five stages using clear and accessible language.

The validation pattern is consistent with other teaching-material development studies that use expert review before implementation. Cahyani and Eska (2021) reported high feasibility for a scientific-based Indonesian module, while Hijrah and Hafid (2024) used subject and language expertise in the validation of an ADDIE-based teaching module. The present result suggests that systematic content organization and clear language supported product feasibility; however, a larger validation panel would provide stronger evidence and reduce dependence on a single judgment in each domain.

Practicality of the Teaching Module

Table 3. Teaching Module Practicality Results

Respondent	Obtained Score	Maximum Score	Percentage	Category
Teacher	48	50	96.00%	Very practical
Students	1,766	2,025	87.21%	Very practical
Average	-	-	91.61%	Very practical

The overall practicality score was 91.61%, which falls in the very practical category. The teacher response score of 96.00% shows that the instructions and learning sequence helped the teacher conduct scientific-based learning. The student response score of 87.21% shows that the module was understandable, attractive, and useful for independent learning. During implementation, the teacher followed the planned learning stages and students completed observing, questioning, collecting information, reasoning, and communicating activities. The high practicality ratings indicate that the module was manageable for classroom use and understandable to students. This is consistent with development studies showing that structured and context-sensitive modules can support guided learning and make technical or vocational content more relevant to learners (Elia et al., 2025; Ismail et al., 2025; Marliansya et al., 2023). In the present study, the contribution lies in providing a clear learning pathway through the five scientific stages, which can reduce repeated explanation and support more independent work.

Preliminary Effectiveness of the Teaching Module

Table 4. Student Pretest and Posttest Descriptive Results

Aspect	Pretest	Posttest
Total score	1,413	2,527
Average	52.35	93.58
Lowest score	13	80
Highest score	67	100
Median	60.00	93.33
Standard deviation	14.524	5.693
Classical mastery	0.00%	100.00%

Table 4 shows a substantial increase in student achievement during the one-group trial. The average score rose from 52.35 on the pretest to 93.58 on the posttest; the lowest score increased from 13 to 80 and the highest from 67 to 100. Classical mastery increased from 0.00% to 100.00%, and the N-gain score was 0.85 in the high category. The mean difference was 41.23 points. Because the individual 27 paired scores were not available in the study records used for this revision, no exact paired-samples inferential statistic or 95% confidence interval is reported. The result is therefore interpreted descriptively through the magnitude of the score increase, classical mastery, and N-gain.

The learning gain is consistent with the way the module structured the writing process rather than presenting definitions and examples alone. Students moved from observing text models to identifying purposes, structures, imperative sentences, action verbs, temporal conjunctions, and relevant vocabulary; they then prepared an outline, arranged the steps logically, developed a complete text, and communicated their work for feedback. This staged progression likely provided explicit scaffolding for learners who initially had difficulty transforming knowledge of a model text into an independently produced procedure text.

The needs analysis had shown that approximately 65% of students had previously failed to reach the Minimum Mastery Criterion (KKM 75). That figure came from the preliminary classroom diagnosis, whereas the formal study pretest in Table 4 showed 0.00% classical mastery; the two figures therefore refer to different baseline sources. The five scientific stages address this difficulty in complementary ways: observing provides a concrete model; questioning helps students identify gaps in structure and language; collecting information expands relevant content and vocabulary; reasoning supports the logical ordering of procedural steps; and communicating creates an opportunity to present, receive feedback, and revise. This interpretation is consistent with Kormasela et al. (2020), who emphasized contextual materials in procedure-text learning, and with vocational-context studies in INTERACTION that connect learning materials with field-specific tasks and workplace relevance (Antika & Asfina, 2023; Elia et al., 2025).

These preliminary effectiveness findings must be interpreted within the study design. The trial used one group without a control group, so the observed increase cannot establish that the module caused the improvement or that it is superior to PjBL, PBL, conventional materials, or other instructional alternatives. The small single-class sample also limits generalizability. A future quasi-experimental study should compare the module with an appropriate control or comparison condition, use an achievement test with documented item-validity and reliability evidence, retain complete paired-score data for exact within-student analysis, involve a larger validation panel, and include students from multiple vocational majors and schools.

CONCLUSION

The Indonesian language teaching module based on the scientific approach for procedure text material was developed systematically through the analysis, design, development, implementation, and evaluation stages of the ADDIE model. The module achieved an average validity score of 96.84% and an average practicality score of 91.61%, both in the very high category. In the Grade X Multimedia trial class, the mean score increased from 52.35 to 93.58, classical mastery reached 100%, and the N-gain score was 0.85. These findings support the module's validity, practicality, and strong preliminary learning potential in the tested class, but they do not demonstrate superiority because the study used a single-group design without a control group. Future research should use a quasi-experimental or controlled design, strengthen instrument and expert-validation evidence, retain complete paired-score data for exact inferential analysis, document representative vocational-context tasks from the module, and expand trials to other vocational majors and school settings.

REFERENCES

Antika, R., & Asfina, R. (2023). Designing a problem-based learning module of English for naval architecture. *INTERACTION: Jurnal Pendidikan Bahasa, 10*(2), 670-679. https://doi.org/10.36232/jurnalpendidikanbahasa.v10i2.4867

Cahyani, N. P., & Eska, W. (2021). Development of Indonesian learning module based on advertising materials for students class V SDN 20 Talawi, Koto XI Tarusan District, Pesisir Selatan Regency. *Jurnal Cerdas Proklamator, 9*(1), 38-44.

Elia, F., Sospita, D., & Andary, R. W. (2025). English for informatics: Insights from evaluating a contextual learning module. *INTERACTION: Jurnal Pendidikan Bahasa, 12*(1), 1317-1326. https://doi.org/10.36232/interactionjournal.v12i1.3906

Hakim, M. N., & Rahayu, F. D. (2019). Pembelajaran saintifik berbasis pengembangan karakter. *Nazhruna: Jurnal Pendidikan Islam, 2*(1), 1-27. https://doi.org/10.31538/nzh.v2i1.148

Hariyadi, H., & Ramaniyar, E. (2021). Penulisan buku teks mahasiswa Bahasa dan Sastra Indonesia IKIP PGRI Pontianak. *Jurnal Pendidikan Bahasa, 10*(2), 215-230. https://doi.org/10.31571/bahasa.v10i2.2229

Hijrah, H., & Hafid, H. (2024). Development of critical listening teaching modules based on gender equality in the FETT of Muhammadiyah University Makassar. *INTERACTION: Jurnal Pendidikan Bahasa, 11*(1), 702-711. https://doi.org/10.36232/jurnalpendidikanbahasa.v11i1.6914

Ismail, I., Rusdin, R., & Prayudi, A. (2025). Preliminary study on contextual digital book and AI audio media for English learning in vocational culinary and tourism programs. *INTERACTION: Jurnal Pendidikan Bahasa, 12*(1), 257-267. https://doi.org/10.36232/interactionjournal.v12i1.2062

Kormasela, D. A., Dawud, D., & Rofi'uddin, A. H. (2020). Pemanfaatan kearifan lokal Maluku dalam pengembangan bahan ajar menulis teks prosedur untuk siswa kelas VII. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 5*(8), 1056-1065. https://doi.org/10.17977/jptpp.v5i8.13872

Kosasih, E. (2017). *Bahasa Indonesia*. Yrama Widya.

Marliansya, I. S., Wardarita, R., Ali, M., & Ismail, G. (2023). The development of Android-based digital pocketbook learning media on short story materials. *INTERACTION: Jurnal Pendidikan Bahasa, 10*(1), 174-182. https://doi.org/10.36232/jurnalpendidikanbahasa.v10i1.3945

Salsabilla, I. I., Jannah, E., & Juanda, J. (2023). Analisis modul ajar berbasis Kurikulum Merdeka. *Jurnal Literasi dan Pembelajaran Indonesia, 3*(1), 33-41.

Sugiyono. (2024). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.

Syafiqri, N. (2025). Investigating the use of project-based learning using animated video media in English learning, writing descriptive text at vocational high school students. *INTERACTION: Jurnal Pendidikan Bahasa, 12*(3), 421-435. https://doi.org/10.36232/interactionjournal.v12i3.3808

Uli, I., & Lizawati, L. (2019). Teknik observasi lingkungan berbasis kearifan lokal dalam meningkatkan kemampuan berpikir kritis. *SeBaSa, 2*(2), 109-117. https://doi.org/10.29408/sbs.v2i2.1569