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ORIGINAL RESEARCH ARTICLE

Development of Thematic Module Based on Environmental Local Wisdom to Foster Deep Learning in Elementary School Students

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ABSTRACT

This study aims to develop a thematic module based on environmental local wisdom that is valid, practical, and effective in fostering deep learning in elementary school students. The study employed Research and Development (R&D) method with the ADDIE model consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The research subjects consisted of 75 fourth-grade students and 3 teachers from three elementary schools in East Lampung. Research instruments included expert validation sheets, teacher and student response questionnaires, and conceptual understanding tests. Validation results by content, media, and language experts showed an average score of 4.4 with a very valid category. Teacher responses obtained a score of 4.63 and student responses 4.52 with a very practical category. The paired sample t-test showed t = -18.47 with significance 0.000 ($p < 0.05$), indicating a significant difference between pretest (58.4) and posttest (84.6) results. Analysis of deep learning indicators showed the highest improvement in knowledge transfer (31.6%) and reflection (31.3%). The average N-Gain was 0.68 in the medium category. This study concludes that the thematic module based on environmental local wisdom is proven valid, practical, and effective in fostering deep learning in elementary school students.

Keywords: Thematic Module, Environmental Local Wisdom, Deep Learning, Elementary School

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan modul tematik berbasis kearifan lokal lingkungan yang valid, praktis, dan efektif dalam menumbuhkan deep learning pada siswa sekolah dasar. Penelitian menggunakan metode Research and Development (R&D) dengan model ADDIE yang meliputi tahap Analysis, Design, Development, Implementation, dan Evaluation. Subjek penelitian terdiri dari 75 siswa kelas IV dan 3 guru dari tiga Sekolah Dasar di Lampung Timur. Instrumen penelitian meliputi lembar validasi ahli, angket respons guru dan siswa, serta tes pemahaman konsep. Hasil validasi oleh ahli materi, media, dan bahasa menunjukkan rata-rata skor 4,4 dengan kategori sangat valid. Respons guru memperoleh skor 4,63 dan respons siswa 4,52 dengan kategori sangat praktis. Uji paired sample t-test menunjukkan nilai t = -18,47 dengan signifikansi 0,000 ($p < 0,05$), yang berarti terdapat perbedaan signifikan antara hasil pretest (58,4) dan posttest (84,6). Analisis indikator deep learning menunjukkan peningkatan tertinggi pada transfer pengetahuan (31,6%) dan refleksi (31,3%). Rata-rata N-Gain sebesar 0,68 dengan kategori sedang. Penelitian ini menyimpulkan bahwa modul tematik berbasis kearifan lokal lingkungan terbukti valid, praktis, dan efektif dalam menumbuhkan deep learning pada siswa sekolah dasar.

Kata Kunci: Modul Tematik, Kearifan Lokal Lingkungan, Deep Learning, Sekolah Dasar

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1. INTRODUCTION

Elementary school education plays a fundamental role in building the foundations of thinking, attitudes, and skills of students. However, various studies indicate that learning practices in elementary schools are still dominated by surface learning approaches that emphasize memorization and routine task completion, thus failing to encourage deep conceptual understanding (Aulia et al., 2025; Yulita et al., 2025). This phenomenon is reflected in the initial observations conducted in three elementary schools in East Lampung, where only 35% of students were actively involved in class discussions, while 65% tended to be passive and merely received information from the teacher. The learning that took place was still dominated by lecture methods and memorization assignments, without providing sufficient space for students to explore, ask questions, and connect concepts with real experiences.

Field observations also revealed that students were more focused on memorizing material rather than understanding concepts deeply. Based on interviews with three fourth-grade teachers, they acknowledged that the available teaching materials were still general and had not accommodated the characteristics of the students' surrounding environment. Teachers also expressed difficulties in designing learning activities that could encourage students to think deeply (deep learning). The assessments conducted were still more focused on measuring memorization rather than conceptual understanding. This indicates a gap between the demands of the Merdeka Curriculum, which emphasizes contextual learning and strengthening the Pancasila student profile, and the reality of classroom learning that remains conventional (Fitrianto & Farisi, 2025).

One relevant approach to address these problems is deep learning. Deep learning emphasizes students' active engagement, the ability to connect new knowledge with previous experiences,

reflection on the learning process, and the application of concepts in authentic contexts (Putri et al., 2025; Hasan et al., 2025a). This approach has been proven to improve the quality of conceptual understanding and higher-order thinking skills in elementary school students (Yulita et al., 2025; Sari & Niswa, 2025). In deep learning, students act as learning subjects who actively construct knowledge through exploration, discussion, and reflection, which is highly relevant to the demands of 21st-century learning that requires higher-order thinking skills (Hattie, 2020).

The implementation of deep learning in elementary school learning demands an authentic learning context that is relevant to students' lives. One potential context is environmental local wisdom. Local wisdom encompasses values, knowledge, traditions, and practices of communities that develop through interaction with the natural and social environment (Kartikasari et al., 2020; Ayomi et al., 2025). The integration of local wisdom in learning can strengthen the relevance of material while enriching students' learning experiences. Based on identification conducted in East Lampung, several potentials of local wisdom were found, including agricultural traditions, natural resource management, mutual cooperation values, traditional games, local culinary, and traditional arts that can be integrated into thematic learning.

Research shows that local wisdom-based learning can improve students' motivation, engagement, and conceptual understanding because the material is directly linked to their real experiences (Zaqiyah et al., 2024; Yusuf et al., 2025). Local context serves as a cognitive anchor that helps students construct knowledge meaningfully and deeply (Hasan et al., 2024; Fitrianto & Farisi, 2025). Learning that highlights environmental local wisdom can also strengthen the values of mutual cooperation, independence, and global diversity in elementary school students, in line with the principles of character strengthening and the development of the Pancasila student profile (Mursalim et al., 2025; Hatima, 2025).

The development of thematic learning modules based on local wisdom is a strategic solution to support meaningful learning in elementary schools. Modules serve as systematic guides that direct students' learning activities and facilitate exploration, reflection, and concept application processes (Lestari, 2023; Fatwa et al., 2024). Contextually designed modules have proven more effective than conventional teaching materials in improving students' conceptual understanding. Research by Fatwa et al. (2024) through bibliometric analysis shows that the development of local wisdom-based modules in elementary schools is a continuously growing research trend.

However, literature review results indicate that thematic modules explicitly designed to foster deep learning through the integration of environmental local wisdom are still very limited (Fatwa et al., 2024; Ayomi et al., 2025). Most modules used in schools are still general, less contextual, and have not accommodated deep learning indicators such as reflection, knowledge transfer, and contextual problem-solving (Aulia et al., 2025; Putri et al., 2025). Previous research has focused more on implementing local wisdom-based learning models without being accompanied by the development of structured and verified teaching modules (Kartikasari et al., 2020; Zaqiyah et al., 2024). Consequently, the implementation of local wisdom-based learning heavily depends on teacher creativity and lacks a standard guide that can be widely replicated (Hasan et al., 2025b).

The research gap lies in the absence of thematic modules that specifically integrate environmental local wisdom with a deep learning orientation for elementary school students. This study offers

novelty in the form of developing a thematic module that not only systematically integrates environmental local wisdom but is also designed with activities that explicitly encourage deep learning, including exploration, discussion, reflection, and contextual problem-solving activities. This module was developed using the ADDIE model, which ensures product validity, practicality, and effectiveness through a structured and expert-verified process.

Beyond cognitive aspects, the integration of local wisdom in thematic learning also contributes to strengthening character, cultural literacy, and environmental awareness in elementary school students (Mursalim et al., 2025; Hatima, 2025). This aligns with the policy direction of the Merdeka Curriculum, which emphasizes contextual learning, strengthening the Pancasila student profile, and developing 21st-century competencies (Fitrianto & Farisi, 2025). Based on the above explanation, research on the development of environmental local wisdom-based thematic modules oriented toward deep learning is highly important and relevant. This study is expected to produce a module that is valid, practical, and effective in fostering deep learning in elementary school students, while also providing theoretical and practical contributions to the development of contextual and meaningful thematic learning in Indonesia.

2. RESEARCH METHODS

This study employed the Research and Development (R&D) method aimed at developing thematic learning products appropriate for the characteristics of elementary school students. This method was chosen because it enables researchers to produce learning products that are not only theoretically feasible but also practical and effective for use in classroom learning (Branch, 2009). The product was designed considering the cognitive, social, and emotional developmental stages of elementary school students who are still in the concrete operational phase according to Piaget's theory. The research design referred to the ADDIE model consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model is considered relevant for developing learning materials in elementary schools because it provides a systematic, simple, and adaptive workflow for the needs of elementary school-aged students (Branch, 2009).

The first stage in the research procedure was analysis, which focused on identifying thematic learning needs in elementary schools. The analysis was conducted on student characteristics, learning outcomes, learning styles, and environmental conditions and local wisdom close to students' lives. Data at this stage were obtained through observation of classroom learning activities, interviews with elementary school teachers, and documentation studies of the learning materials used. Needs analysis was also conducted through questionnaires distributed to 3 teachers and 75 fourth-grade students from three elementary schools in East Lampung to measure perceptions about the need for local wisdom-based thematic teaching materials and students' interests and preferences for contextual learning. Environmental local wisdom identification was conducted through field observations, interviews with community leaders, and documentation studies.

The next stages included design and development, namely the preparation of thematic learning module designs based on local wisdom appropriate for the concrete world of elementary school

children. In the design stage, learning objectives were formulated by integrating deep learning indicators (conceptual understanding, contextual connection, reflection, and knowledge transfer), the theme "Our Environment Friend" was selected with three sub-themes, a concept map was developed, and the module structure was designed. In the development stage, the module was systematically compiled by integrating environmental local wisdom into each learning activity. Module validation was conducted by three experts: content experts, media experts, and language experts, using instruments referring to learning module feasibility standards (Lestari, 2023). The rating scale used was 1-5 with categories: 1.00-1.75 (Very Poor), 1.76-2.50 (Poor), 2.51-3.25 (Fair), 3.26-4.00 (Good), and 4.01-5.00 (Very Good).

The developed product was then implemented through limited trials and extensive trials. Limited trials were conducted at SD Negeri 1 Purbolinggo involving 1 teacher and 25 fourth-grade students over 3 meetings. Extensive trials involved 3 teachers and 75 students from three elementary schools in East Lampung (SD Negeri 1 Purbolinggo, SD Negeri 2 Purbolinggo, and SD Negeri 3 Purbolinggo) over 6 meetings covering the three sub-themes in the module. Instruments used in the implementation stage were teacher response questionnaires and student response questionnaires to assess the practicality of the module. Teacher response questionnaires measured ease of use, clarity of instructions, and module support for thematic learning, while student response questionnaires measured interest, ease of understanding, and learning motivation.

The evaluation stage was conducted continuously throughout the research process and concluded with summative evaluation to assess the module's effectiveness in fostering deep learning in elementary school students. Effectiveness evaluation used a one-group pretest-posttest design (pre-experimental). The instrument used was a conceptual understanding test and deep learning indicators consisting of 20 multiple-choice questions and 5 essay questions. The test was administered before (pretest) and after (posttest) module use. Data were analyzed using descriptive and inferential statistics. Prerequisite tests included the Shapiro-Wilk normality test and Levene's Test for homogeneity. Hypothesis testing was conducted using paired sample t-test with a significance level of 0.05. To determine the module's effectiveness level, N-Gain calculation was performed using the formula developed by Hake (1998): N-Gain = (Posttest Score - Pretest Score) / (Ideal Score - Pretest Score), with categories: high ($g \geq 0.7$), medium ($0.3 \leq g < 0.7$), and low ($g < 0.3$).

3. RESULTS AND FINDINGS

Analysis Stage

Observations conducted in three elementary schools in East Lampung showed that fourth-grade students were in the concrete operational cognitive development stage and required learning connected to real experiences. Student active engagement in learning was still low, with only 35% of students actively involved in class discussions, while 65% tended to be passive. Analysis of the Merdeka Curriculum documents showed that thematic learning in elementary schools requires the integration of subjects within a contextual and meaningful theme. However, based on interviews with three fourth-grade teachers, the implementation of thematic learning in the field still faces

obstacles due to limited contextual teaching materials that have not systematically integrated local wisdom.

Table 1. Results of Teacher and Student Needs Analysis

No	Teacher Needs Analysis Indicators	Mean Score	Category
1	Teachers need contextual thematic teaching materials	4.7	Very High
2	Teachers find it difficult to develop local wisdom-based modules	4.5	Very High
3	Teachers need deep learning teaching guidelines	4.6	Very High
4	Existing modules have not encouraged deep understanding	4.4	Very High
Mean		4.55	Very High
No	Student Needs Analysis Indicators	Percentage	
1	Students like learning connected to the surrounding environment	82%	
2	Students understand material more easily with daily life examples	76%	
3	Students want more attractive teaching materials with pictures	68%	
4	Students want varied learning activities	71%	

Design Stage

Based on the analysis results, learning objectives were formulated by integrating deep learning indicators (conceptual understanding, contextual connection, reflection, and knowledge transfer). The theme "Our Environment Friend" was selected with three sub-themes: (1) The Uniqueness of My Surrounding Environment; (2) Community Economic Activities; and (3) Maintaining Environmental Sustainability. A concept map was developed to map the interconnections between subjects (Science, Social Studies, Indonesian Language, Mathematics, Civics, and Arts) in each sub-theme.

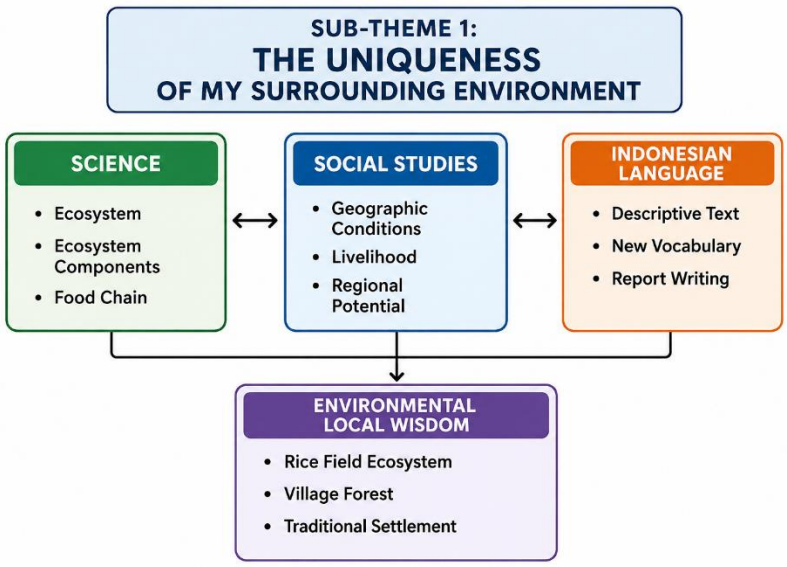

Figure 1. Concept Map of Sub-theme 1: The Uniqueness of My Surrounding Environment

The module structure was designed with three main parts: the opening section (title page, preface, table of contents, usage instructions, concept map), the core section for each sub-theme (learning objectives, exploration activities, discussion, reflection, problem-solving, and evaluation), and the closing section (summary, glossary, references, answer key). Graphic design specifications included A4 size, Calibri and Comic Sans MS fonts, 12-14 pt font size, bright colors, and illustrations depicting local wisdom.

Figure 2. Conceptual Design of the Thematic Module Based on Environmental Local Wisdom

The figure illustrates the visual design and main structure of the thematic module based on environmental local wisdom developed for fourth-grade elementary school students. The module is systematically designed through four main components: (1) the module cover, which presents the module identity, grade level, learning theme, and illustrations of the surrounding environment and local wisdom to establish the learning context; (2) the content/material pages, which present thematic learning materials through explanatory texts, illustrations, examples from the surrounding environment, and information about local wisdom; (3) the learning activity pages, which provide activities such as observing, exploring, discussing, collaborating, problem-solving, and reflecting, enabling students to connect learning concepts with their real-life experiences; and (4) the evaluation and assessment pages, which contain exercises, conceptual understanding questions, reflection activities, and assessment rubrics to measure conceptual understanding, contextual connection, reflection, and knowledge transfer. This structure follows the module design consisting of an opening section, core learning activities for each sub-theme, and a closing section. Thus, the module functions not only as a learning resource but also as a structured guide for

contextual learning that supports deep learning through exploration, discussion, reflection, and problem-solving activities rooted in the students' local environment.

Development and Validation Stage

Module validation was conducted by three experts. The validation results are presented in Table 2.

Table 2. Expert Validation Results

No	Validation Aspect	Mean Score	Category
1	Content Expert	4.3	Very Valid
2	Media Expert	4.4	Very Valid
3	Language Expert	4.5	Very Valid
Mean		4.4	Very Valid

Implementation Stage

The results of limited and extensive trials showed positive responses from teachers and students.

Table 3. Results of Teacher and Student Responses

No	Indicator	Limited Trial	Extensive Trial	Category
1	Teacher Response (mean)	4.63	4.58	Very Practical
2	Student Response (mean)	4.52	4.49	Very Practical
3	Learning Implementation	92%	90%	Very High
4	Student Engagement	78%	75%	High

Evaluation Stage

Effectiveness evaluation used a one-group pretest-posttest design with 75 students. The pretest and posttest results are presented in Table 4.

Table 4. Descriptive Statistics of Pretest and Posttest Results

No	Statistic	Pretest	Posttest
1	Mean	58.4	84.6
2	Median	57.0	85.0
3	Mode	55.0	86.0
4	Standard Deviation	12.3	9.8
5	Highest Score	80.0	95.0
6	Lowest Score	35.0	65.0

The Shapiro-Wilk normality test showed significance values of 0.082 for pretest and 0.114 for posttest ($p > 0.05$), indicating normally distributed data. Levene's Test for homogeneity showed $F = 2.341$ with significance 0.128 ($p > 0.05$), indicating homogeneous data. The paired sample t-test showed $t = -18.47$ with significance 0.000 ($p < 0.05$), indicating a significant difference between pretest and posttest results.

Table 5. Analysis of Deep Learning Indicators

No	Deep Learning Indicators	Pretest	Posttest	Improvement	Category
1	Conceptual Understanding	56.2	82.4	26.2	High
2	Contextual Connection	54.8	85.1	30.3	High
3	Reflection	52.3	83.6	31.3	High
4	Knowledge Transfer	48.7	80.3	31.6	High
Mean		52.8	82.9	30.1	High

N-Gain analysis showed an average of 0.68 in the medium category. A total of 56% of students were in the high improvement category, 37.3% in the medium category, and 6.7% in the low category.

4. DISCUSSION

Module Development Process and Product Feasibility

The development of the environmental local wisdom-based thematic module in this study followed the ADDIE model consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was chosen because it provides a systematic, structured, and adaptive workflow for developing learning materials in elementary schools (Branch, 2009). The analysis stage showed that thematic learning in elementary schools still faces obstacles in terms of the availability of contextual teaching materials oriented toward deep learning. This finding aligns with research by Aulia et al. (2025) and Yulita et al. (2025), which states that learning practices in elementary schools are still dominated by surface learning approaches that emphasize memorization and have not encouraged deep conceptual understanding.

The needs analysis results showed that 82% of students liked learning connected to the surrounding environment, and teachers needed modules that could systematically integrate local wisdom. The integration of environmental local wisdom in the module was based on the identification of local potential in the students' environment. This aligns with the views of Kartikasari et al. (2020) and Ayomi et al. (2025), who state that local wisdom encompasses values, knowledge, traditions, and practices of communities that develop through interaction with the natural and social environment. The identification of local wisdom in East Lampung resulted in six main potentials: agricultural traditions, natural resource management, mutual cooperation values, traditional games, local culinary, and traditional arts that can be integrated into thematic learning.

Expert validation showed that the developed module met very good validity criteria with an overall mean of 4.4. Content expert validation obtained a score of 4.3, with the local wisdom integration aspect receiving the highest score of 4.7. This indicates that the module successfully integrated local wisdom effectively. Media expert validation obtained a score of 4.4, with the visual appeal aspect for elementary school students receiving a score of 4.7, indicating that the module design is appropriate for elementary school student characteristics. Language expert validation obtained a score of 4.5, with the aspect of language suitability to student developmental levels receiving a score of 4.7. These results align with research by Fatwa et al. (2024), which through bibliometric

analysis confirms that the development of local wisdom-based modules in elementary schools is a continuously growing research trend.

Practicality of the Module Based on Teacher and Student Responses

Teacher responses to module use obtained an average score of 4.63 in the very practical category. Teachers assessed that the module facilitated thematic learning implementation (4.8), instructions were clear (4.7), and the module was effective in integrating local wisdom (4.8). Student responses obtained an average score of 4.52 in the very practical category. Students assessed the module as interesting and fun (4.6), pictures and illustrations helped understanding (4.7), and students could connect the material with the surrounding environment (4.6).

These findings align with research by Zaqiyah et al. (2024) and Yusuf et al. (2025), which shows that local wisdom-based learning can improve student motivation and engagement. Local context serves as a cognitive anchor that helps students construct knowledge meaningfully and deeply (Hasan et al., 2024; Fitrianto & Farisi, 2025). The use of illustrations and pictures depicting environmental local wisdom proved to increase visual appeal and student understanding, as stated by Lestari (2023) that contextually designed modules have proven more effective than conventional teaching materials.

Positive responses from teachers and students indicate that the environmental local wisdom-based thematic module meets practicality aspects and can be widely used in elementary school learning. This is important because the implementation of local wisdom-based learning has so far heavily depended on teacher creativity and has lacked a standard guide that can be widely replicated (Hasan et al., 2025b). Learning implementation reached 92% in limited trials and 90% in extensive trials, indicating that the module can be well implemented in various schools.

Effectiveness of the Module in Fostering Deep Learning

Effectiveness test results showed that the environmental local wisdom-based thematic module was effective in fostering deep learning in elementary school students. The increase in mean scores from 58.4 in the pretest to 84.6 in the posttest, with an improvement of 26.2 points (44.9%), indicates a significant impact. The paired sample t-test showed $t = -18.47$ with significance 0.000 ($p < 0.05$), indicating a significant difference between pretest and posttest results. Thus, the use of the environmental local wisdom-based thematic module had a significant impact on improving conceptual understanding and deep learning in students.

Analysis of the four deep learning indicators showed improvement in all indicators. The highest improvement occurred in the knowledge transfer indicator (31.6%) and reflection (31.3%), which are key deep learning indicators. This shows that the developed module was effective in encouraging students to think reflectively and apply concepts in new contexts. This finding aligns with research by Hasan et al. (2025a), which shows that the integration of deep learning approaches in elementary school learning has a positive impact on student understanding. Putri et al. (2025) also emphasized that teacher strategies in applying deep learning principles through local wisdom in elementary schools have a positive impact on student understanding.

The average N-Gain obtained was 0.68 in the medium category, with 56% of students in the high improvement category. This indicates that the environmental local wisdom-based thematic module has medium to high effectiveness. These findings align with research by Aulia et al. (2025) and Sari & Niswa (2025), which states that the implementation of deep learning in elementary schools can improve critical thinking, problem-solving, and conceptual understanding skills. Students engaged in deep learning showed more durable understanding and were able to apply concepts in different situations (Hattie, 2020; Yulita et al., 2025).

The Role of Local Wisdom in Thematic Learning

The integration of environmental local wisdom in the module proved to strengthen material relevance and enrich students' learning experiences. This aligns with the views of Mursalim et al. (2025) and Hatima (2025), who state that the integration of local wisdom in thematic learning contributes to strengthening character, cultural literacy, and environmental awareness in elementary school students. Learning that highlights environmental local wisdom can strengthen the values of mutual cooperation, independence, and global diversity in students, in line with the principles of character strengthening and the development of the Pancasila student profile (Fitrianto & Farisi, 2025).

Local wisdom serves as a bridge between abstract knowledge and students' concrete experiences. When students learn ecosystem concepts through direct observation of rice field ecosystems in their surrounding environment, they not only understand concepts theoretically but also connect them with environmental management practices carried out by the local community. This aligns with constructivist theory, which emphasizes that knowledge is actively constructed by students through experience and interaction with the environment (Hattie, 2020). Exploration, discussion, reflection, and contextual problem-solving activities in the module provide holistic and meaningful learning experiences.

This study also shows that local wisdom-based learning not only improves cognitive aspects but also affective aspects of students. Students showed increased environmental awareness and appreciation for local culture after participating in learning with the module. This aligns with research by Murwati et al. (2022), which shows that local wisdom-based thematic learning is effective in improving student engagement and understanding in the new normal period. Zaqiyah et al. (2024) also found that the implementation of local wisdom-based thematic learning can improve student motivation and engagement.

Contributions and Implications of the Research

This study provides theoretical contributions in three aspects. First, this study enriches the concept of deep learning by showing that deep learning can be fostered through the integration of environmental local wisdom in thematic learning. This finding expands understanding of the factors supporting deep learning, where local context serves as a cognitive anchor that helps students construct knowledge meaningfully and deeply (Hasan et al., 2024; Fitrianto & Farisi, 2025). Second, this study contributes to the development of thematic learning theory by showing that local wisdom-based thematic learning is more effective in improving conceptual understanding and deep learning in students. Third, this study enriches the literature on module

development by showing that the ADDIE model can be effectively applied to develop local wisdom-based thematic modules that are valid, practical, and effective.

Practically, the environmental local wisdom-based thematic module produced can be directly used by teachers as contextual teaching material oriented toward deep learning. This study also provides practical guidance for teachers and schools in developing local wisdom-based learning modules, from the needs analysis, design, development, implementation, to evaluation stages. Furthermore, this study encourages the creation of more meaningful and relevant learning for students, because learning materials are connected to the surrounding environment and culture, in line with the policy direction of the Merdeka Curriculum that emphasizes contextual learning and strengthening the Pancasila student profile.

5. CONCLUSION AND SUGGESTIONS

Based on the research results and discussion, it can be concluded that the environmental local wisdom-based thematic module developed through the ADDIE model is proven valid, practical, and effective in fostering deep learning in elementary school students. Validation results by content, media, and language experts showed an average score of 4.4 with a very valid category. Teacher and student responses showed a very practical category with scores of 4.63 and 4.52 respectively. Effectiveness testing showed a significant improvement from pretest (58.4) to posttest (84.6) with $t = -18.47$ ($p < 0.05$). Analysis of deep learning indicators showed the highest improvement in knowledge transfer (31.6%) and reflection (31.3%), with an average N-Gain of 0.68 (medium category). This module contributes to the development of contextual and meaningful thematic learning, as well as strengthening student character and environmental awareness through the integration of local wisdom.

Future researchers are advised to develop local wisdom-based thematic modules for other themes and grade levels, use more rigorous experimental designs with control groups, develop modules in digital or interactive e-module forms, and conduct longitudinal studies to determine the long-term impact of module use on deep learning and student character. Teachers are expected to adapt and develop similar modules by identifying local wisdom in their respective regions, and pay attention to the implementation of reflection activities and contextual problem-solving to maximize the growth of deep learning. Schools should support the development and implementation of local wisdom-based learning modules as part of learning innovation appropriate to the school's environmental characteristics.

6. REFERENCES

Aulia, N., Iskandar, S., Amalia, M., & Naziha, P. F. (2025). Konsep dan implementasi pendekatan deep learning di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *10*(2), 1–15. https://doi.org/10.23969/jp.v10i2.25562

Ayomi, F. P., Nasution, N., & Puspita, A. M. I. (2025). Local wisdom learning profile in primary schools in the last five years. *Jurnal Cakrawala Pendas*, *11*(1), 1–15. https://doi.org/10.31949/jcp.v11i1.11830

Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. New York: Springer.

Fatwa, A., Raharjo, T. J., Subali, B., & Ellianawati, E. (2024). Research trends in module development based on local wisdom in elementary schools: A bibliometric analysis. *Journal of Primary Education*, *13*(2), 100–116. https://doi.org/10.15294/jpe.v13i2.25034

Fitrianto, I., & Farisi, M. (2025). Integrating local wisdom into 21st century skills: A contextual framework for culturally relevant pedagogy. *International Journal of Post Axial: Futuristic Teaching and Learning*, *3*(2), 444–459. https://doi.org/10.59944/postaxial.v3i2.444

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74.

Hasan, A. W., Akbar, A., & Putra, E. D. (2025a). Integrasi pendekatan deep learning dalam pembelajaran Bahasa Indonesia di sekolah dasar. *Jurnal Kajian Pendidikan dan Cakrawala Pembelajaran*, *1*(3), 46–57. https://doi.org/10.64690/jakap.v1i3.295

Hasan, H., Nursalam, H., & Syamsuddin, A. (2024). Bridging culture and cognition: Deep learning strategies in local-wisdom-based IPAS classrooms. *PPSDP International Journal of Education*, *4*(2), 166–183. https://doi.org/10.59175/pijed.v4i2.736

Hasan, H., Nursalam, H., & Syamsuddin, A. (2025b). Deep learning strategies in local-wisdom-based classrooms: A systematic review. *PPSDP International Journal of Education*, *4*(2), 1–15. https://doi.org/10.59175/pijed.v4i2.736

Hatima, Y. (2025). Sinergi deep learning dan kearifan lokal untuk pengembangan literasi Bahasa Indonesia anak SD. *Journal of Humanities, Social Sciences, and Education*, *1*(7), 20–31. https://doi.org/10.64690/jhuse.v1i7.313

Hattie, J. (2020). *Visible Learning: Feedback*. Routledge. https://doi.org/10.4324/9780429485487

Kartikasari, F. N., Kustiono, K., & Utomo, U. (2020). Thematic learning book with local wisdom insight of Boyolali Municipality for primary school students. *Journal of Primary Education*, 9(2), 220–226. https://doi.org/10.15294/jpe.v9i2.37508

Lestari, I. D. (2023). Pengembangan modul pembelajaran tematik integratif berbasis kearifan lokal di sekolah dasar. *Didaktika: Jurnal Pendidikan Sekolah Dasar*, *6*(1), 9–14. https://doi.org/10.21831/didaktika.v6i1.41699

Mursalim, B., Maftuh, B., Supriatna, M., & Anakotta, R. (2025). Promoting cultural literacy through a local wisdom-based learning model. *International Journal of Research in Education and Research (IJORER)*, *6*(3), 12–25. https://doi.org/10.46245/ijorer.v6i3.867

Murwati, Y., Sumardjoko, B., & Prastiwi, Y. (2022). Thematic learning based on local wisdom in the new normal time in elementary school. *Jurnal Pendidikan Indonesia*, *11*(3), 388–396. https://doi.org/10.23887/jpiundiksha.v11i3.47039

Putri, D. D., Harsono, A. M. B., & Suriansyah, A. (2025). Strategi guru dalam menerapkan prinsip deep learning melalui kearifan lokal di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *10*(4), 1–14. https://doi.org/10.23969/jp.v10i4.38317

Sari, A. W., & Niswa, K. (2025). Implementation of deep learning approach to English learning in elementary school. *IDEAS: Journal on English Language Teaching and Learning*, *13*(1), 1–12. https://doi.org/10.24256/ideas.v13i1.6732

Yulita, Y., Mawardi, M., Christi, S. R. N., & Akbar, A. (2025). Deep learning pada pembelajaran sekolah dasar: Upaya untuk mempromosikan kemampuan berpikir kritis. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *10*(4), 1–12. https://doi.org/10.23969/jp.v10i4.35375

Yusuf, S., Aula, I. A., & Kahfi, N. S. (2025). Contextual learning model based on local wisdom to stimulate early childhood social skills. *Journal of Education Research and Evaluation*, *9*(3), 663–672. https://doi.org/10.23887/jere.v9i3.102878

Zaqiyah, S., Laksana, J. T., Rachmawati, D. D., Lestari, E. D., & Wijaya, B. R. (2024). Analisis implementasi pembelajaran tematik berbasis kearifan lokal. *Teaching: Jurnal Inovasi Keguruan dan Ilmu Pendidikan*, 2(4), 1–13. https://doi.org/10.51878/teaching.v2i4.1884