

Integrating Indigenous Values into Sustainable Ecological Cultural Learning: A Model for Elementary Education

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Abstrak: Penelitian ini bertujuan untuk mengembangkan dan memvalidasi model *Sustainable Ecological Cultural Learning* (SECL) yang terintegrasi dengan nilai-nilai kearifan lokal untuk pendidikan sekolah dasar. Model ini dirancang untuk menjawab keterbatasan integrasi keberlanjutan ekologi dan literasi budaya dalam pembelajaran sekolah dasar, sekaligus mendukung pendidikan yang responsif terhadap budaya dan berorientasi pada keberlanjutan. Penelitian ini menggunakan pendekatan penelitian dan pengembangan (*research and development*) dengan kerangka ADDIE, yang difokuskan pada tahap analisis, desain, dan pengembangan, dengan evaluasi yang dibatasi pada uji validitas berbasis ahli. Model SECL divalidasi oleh para ahli di bidang pendidikan sekolah dasar, pendidikan lingkungan, dan kajian budaya menggunakan instrumen validasi terstruktur dengan skala Likert empat poin. Hasil validasi menunjukkan bahwa model SECL memperoleh skor validitas rata-rata keseluruhan sebesar 3,53 dari 4,00 dengan kategori sangat valid. Skor validitas yang tinggi diperoleh pada aspek integrasi nilai-nilai kearifan lokal ($M = 3,70$), relevansi terhadap prinsip pendidikan berkelanjutan ($M = 3,60$), serta kesesuaian dengan karakteristik siswa sekolah dasar ($M = 3,55$). Temuan ini menunjukkan bahwa model SECL memiliki landasan konseptual yang kuat, layak, dan sesuai untuk konteks pendidikan sekolah dasar. Model yang telah divalidasi ini memberikan dasar yang kokoh untuk implementasi pembelajaran di kelas serta pengujian efektivitas pada penelitian selanjutnya.

Kata kunci: Nilai Kearifan Lokal, Keberlanjutan, Pembelajaran Budaya Ekologis, Pendidikan Sekolah Dasar

Abstract: This study aimed to develop and validate a *Sustainable Ecological Cultural Learning* (SECL) model integrated with indigenous values for elementary education. The model was designed to address the limited integration of ecological sustainability and cultural literacy in elementary school learning while supporting culturally responsive and sustainability-oriented education. This study employed a research and development approach using the ADDIE framework, focusing on the analysis, design, and development stages, with evaluation limited to expert-based validity testing. The SECL model was validated by experts in elementary education, environmental education, and cultural studies using a structured validation instrument with a four-point Likert scale. The validation results indicate that the SECL model achieved an overall mean validity score of 3.53 out of 4.00, categorized as very valid. High validity scores were obtained across key aspects, including integration of indigenous values ($M = 3.70$), relevance to sustainable education principles ($M = 3.60$), and alignment with elementary student characteristics ($M = 3.55$). These findings demonstrate that the SECL model is conceptually sound, feasible, and appropriate for elementary education contexts. The validated model provides a solid foundation for further classroom implementation and effectiveness testing in future studies.

Keywords: Indigenous Values, Sustainable, Ecological Cultural Learning, Elementary Education



1. Introduction

Environmental degradation, climate change, and the increasing frequency of ecological disasters have emerged as critical global issues that directly affect human life and educational systems (UNESCO, 2017; Sterling, 2020). These challenges highlight the urgent need for education to play a transformative role in fostering sustainability awareness and responsible environmental behavior from an early age (Leicht et al., 2018; UNESCO, 2020).

In the Indonesian context, ecological problems are closely linked to the gradual erosion of indigenous values and local wisdom that traditionally functioned as guiding principles for sustainable environmental management (Nakashima et al., 2018; Suparmini et al., 2019). Elementary education serves as a foundational stage for developing students' ecological awareness and cultural identity, as values and attitudes formed during this period tend to persist into adulthood (OECD, 2019; Pratiwi & Susanto, 2021).

Despite this importance, learning practices in elementary schools often prioritize cognitive achievement and curriculum completion, while cultural and ecological dimensions are addressed in a fragmented and superficial manner (Sterling, 2016; Widodo et al., 2020). This approach limits students' opportunities to meaningfully connect environmental knowledge with their sociocultural contexts, resulting in low cultural literacy and weak ecological responsibility (Gay, 2018; Taylor & Sobel, 2021).

Indigenous values encompass local knowledge, beliefs, norms, and practices that have been developed through long-term interaction between communities and their environments (Nakashima et al., 2018; UNESCO, 2022). Previous studies emphasize that integrating indigenous knowledge into education can enhance students' cultural literacy, strengthen environmental ethics, and support sustainable development goals (Battiste, 2017; McKinley & Stewart, 2021).

Cultural literacy refers to individuals' ability to understand, interpret, and apply cultural knowledge within social and environmental contexts (UNESCO, 2018; OECD, 2020). In elementary education, cultural literacy development should be closely integrated with ecological learning to promote holistic and value-based education that balances cognitive, affective, and behavioral domains (Gay, 2018; Leicht et al., 2018). However, empirical evidence indicates that systematic learning models integrating indigenous values into sustainable ecological learning for elementary students remain limited, particularly in developing countries (Widodo et al., 2020; Pratiwi & Susanto, 2021).

To address this gap, this study proposes a Sustainable Ecological Cultural Learning (SECL) model integrated with indigenous values. The model is designed to connect ecological concepts with local cultural practices through structured learning phases that emphasize cultural exploration, ecological contextualization, value integration, collaborative activities, and reflection (Sterling, 2016; Taylor & Sobel, 2021). The SECL model adopts culturally responsive pedagogy and sustainability principles to ensure learning relevance and contextual meaning for elementary students (Gay, 2018; UNESCO, 2020).

This study focuses on the development and validation of the SECL model. Specifically, the objectives are to (1) develop a Sustainable Ecological Cultural Learning model integrated with indigenous values for elementary education and (2) examine the content and construct validity of the model through expert judgment. Establishing model validity is essential to ensure conceptual soundness and feasibility before broader classroom implementation and effectiveness testing (Plomp, 2015; Akker et al., 2019).

2. Methodology

a. Research Design

This study employed a research and development (R&D) approach using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) as a systematic framework for developing an educational learning model. The ADDIE model was selected due to its structured and iterative nature, which is suitable for developing, validating, and refining instructional models in educational research (Plomp, 2015; Akker et al., 2019). In this study, the ADDIE stages were applied with a developmental emphasis, and the research was intentionally limited to the analysis, design, and development stages, with evaluation focused on expert-based validity testing. The implementation and effectiveness testing stages are planned for subsequent studies.

b. Analysis Stage

The analysis stage aimed to identify the need for a learning model that integrates indigenous values into sustainable ecological and cultural learning in elementary education. This stage involved a literature



review on sustainable education, indigenous knowledge integration, and cultural literacy, as well as an analysis of current learning practices in elementary schools. The analysis revealed that existing instructional practices tend to treat ecological education and cultural learning as separate components, resulting in fragmented learning experiences. Moreover, there is a lack of structured learning models that systematically integrate indigenous values into ecological learning activities. These findings underline the need to develop a Sustainable Ecological Cultural Learning (SECL) model that is contextual, culturally responsive, and aligned with sustainability principles.

c. Design Stage

Based on the analysis results, the design stage focused on conceptualizing the SECL model framework. This stage involved designing the model components, including learning objectives, learning syntax, teacher and student roles, learning materials, and assessment strategies. The SECL model was designed to consist of structured learning phases: cultural exploration, ecological contextualization, value integration, collaborative activities, and reflection. Indigenous values were embedded in each phase to ensure meaningful integration rather than surface-level inclusion. The design also aligned the model with elementary curriculum characteristics and students' developmental stages.

d. Development Stage

The development stage involved translating the conceptual design into a prototype of the SECL model. This included developing detailed learning procedures, instructional guidelines for teachers, sample learning activities, and supporting learning materials. At this stage, the model underwent expert validation to examine its content and construct validity. Expert judgment was used to assess the appropriateness, coherence, clarity, and feasibility of the model components. The experts consisted of specialists in elementary education, cultural studies, and environmental education.

e. Validity Evaluation

The evaluation stage in this study focused on model validity through expert assessment. Validation instruments were developed using a Likert-scale questionnaire covering aspects such as model relevance, theoretical foundation, integration of indigenous values, learning syntax clarity, and applicability in elementary education. The validity data were analyzed quantitatively to determine the level of model validity and qualitatively to obtain expert suggestions for model refinement. The results of the validation served as the basis for revising and finalizing the SECL model prototype before further implementation.

f. Research Output

The primary output of this research is a validated Sustainable Ecological Cultural Learning (SECL) model integrated with indigenous values for elementary education. The validated model is expected to provide a conceptual and practical foundation for future studies focusing on classroom implementation and effectiveness testing.

3. Results and Discussion

a. Results

The Sustainable Ecological Cultural Learning (SECL) model integrated with indigenous values was evaluated through expert judgment to determine its content and construct validity. The validation process involved experts in elementary education, environmental education, and cultural studies. The experts assessed the model using a validation instrument consisting of several aspects, including theoretical foundation, model structure, integration of indigenous values, learning syntax, and feasibility for elementary education.

The validation results indicate that the SECL model demonstrates a high level of validity across all assessed aspects. Quantitative analysis shows that the average validity score falls within the valid to very valid category, indicating that the model is conceptually sound and appropriate for use in elementary education. Table 1 presents the summary of expert validation results for each assessed aspect of the SECL model.

**Table 1. Expert Validation Results of the SECL Model**

No.	Validation Aspect	Mean Score	Validity Category
1	Relevance to Sustainable Education Principles	3.60	Very Valid
2	Theoretical Foundation of the Model	3.50	Very Valid
3	Integration of Indigenous Values	3.70	Very Valid
4	Clarity of Learning Syntax	3.45	Valid
5	Alignment with Elementary Student Characteristics	3.55	Very Valid
6	Feasibility of Implementation	3.40	Valid
Overall Average		3.53	Very Valid

Note: Scale 1–4 (1 = not valid, 2 = less valid, 3 = valid, 4 = very valid).

The validation results show that the integration of indigenous values obtained the highest mean score, indicating that experts strongly agreed on the relevance and depth of indigenous value integration within the SECL model. This suggests that the model successfully embeds local wisdom into ecological and cultural learning in a meaningful and systematic manner.

The learning syntax and feasibility aspects were rated as valid, indicating that the learning phases are clear and implementable, although minor revisions were suggested to enhance clarity and instructional flexibility. Overall, the average validity score confirms that the SECL model meets the criteria of a valid learning model and is suitable for further implementation and effectiveness testing in elementary school classrooms.

Based on qualitative feedback from experts, minor revisions were made to improve the clarity of instructional guidelines and to strengthen the alignment between learning activities and indigenous values. These revisions focused on refining learning instructions, providing clearer examples of indigenous practices, and adjusting learning activities to better match elementary students' developmental levels. Following these revisions, the SECL model was finalized as a validated learning model ready for limited implementation and subsequent effectiveness evaluation.

b. Discussion

The results of expert validation indicate that the Sustainable Ecological Cultural Learning (SECL) model integrated with indigenous values demonstrates a high level of validity across all assessed aspects. This finding suggests that the model is conceptually sound and aligns well with contemporary principles of sustainable education and culturally responsive pedagogy. Previous studies emphasize that learning models grounded in sustainability and local culture must be supported by strong theoretical foundations to ensure coherence and relevance in educational practice (Sterling, 2016; Leicht et al., 2018; UNESCO, 2020). The high validity scores obtained in this study confirm that the SECL model meets these foundational requirements.

The strong validity of the indigenous values integration aspect highlights the importance of embedding local wisdom meaningfully within learning processes rather than treating it as supplementary content. Indigenous knowledge systems have been widely recognized as essential resources for sustainability education due to their ecological orientation and contextual relevance (Nakashima et al., 2018; McKinley & Stewart, 2021; UNESCO, 2022). The SECL model operationalizes this perspective by systematically incorporating indigenous values into each learning phase, thereby supporting the development of students' cultural literacy and ecological awareness simultaneously.

The validity results related to learning syntax and model structure indicate that the SECL model provides clear and logical instructional procedures suitable for elementary education. Structured learning phases are critical in model-based learning to ensure instructional clarity and ease of implementation for teachers (Plomp, 2015; Akker et al., 2019; Branch, 2015). Although the learning syntax was rated slightly lower than other aspects, it still fell within the valid category, suggesting that the model is feasible while allowing room for minor refinements based on expert feedback.



The feasibility aspect of the SECL model further supports its potential applicability in real classroom settings. Feasible learning models are characterized by their adaptability to curriculum demands, teacher capacity, and student characteristics (OECD, 2019; Widodo et al., 2020; Taylor & Sobel, 2021). The experts' evaluation confirms that the SECL model is appropriate for elementary students' developmental levels and aligns with curriculum expectations, reinforcing its practicality as a pedagogical framework for sustainable and cultural learning.

Overall, the validation findings affirm that the SECL model is ready for limited implementation and further empirical testing. Establishing model validity is a crucial step in research and development studies, as it ensures that subsequent implementation and effectiveness evaluations are built upon a credible and well-designed framework (Plomp, 2015; Akker et al., 2019; OECD, 2020). The validated SECL model thus contributes to the growing body of research on sustainable and culturally responsive education by offering a structured model that integrates indigenous values into elementary learning contexts.

4. Conclusions

This study developed a Sustainable Ecological Cultural Learning (SECL) model integrated with indigenous values for elementary education using a research and development approach based on the ADDIE framework. The development process emphasized conceptual clarity, cultural relevance, and alignment with sustainability principles to address the need for meaningful ecological and cultural learning at the elementary level. The results of expert validation indicate that the SECL model demonstrates a high level of content and construct validity across all assessed aspects, including theoretical foundation, integration of indigenous values, learning syntax, and feasibility of implementation. These findings confirm that the model is conceptually sound and appropriate for elementary school contexts, providing a solid foundation for culturally responsive and sustainability-oriented learning.

By systematically integrating indigenous values into ecological and cultural learning processes, the SECL model offers a structured pedagogical framework that supports the development of students' cultural literacy and ecological awareness. The validated model contributes to the field of sustainable education by bridging local wisdom and formal schooling through a coherent and adaptable learning design. Although this study was limited to the development and validation stages, the validated SECL model is ready for limited classroom implementation and further empirical testing. Future research is recommended to examine the practicality and effectiveness of the model through experimental or quasi-experimental studies and to explore its long-term impact on students' attitudes and behaviors toward environmental sustainability.

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