Need Analysis on The Integration of Green Education and Local Culture Literacy in English Reading Learning Materials

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ABSTRACT
The integration of Green Education and Local Culture Literacy into English language learning has gained increasing attention recently. However, studies observing the need to infuse both elements into English reading learning materials for vocational schools remain limited. This study aims to investigate the extent to which Green Education and Local Culture Literacy are represented in existing English reading learning materials and to identify teachers' needs regarding the development of contextualized materials for 10th grade of vocational school students. Employing a qualitative descriptive approach, the study collected data through document analysis of existing English reading learning materials utilized in vocational schools and in-depth interviews with English teachers. The findings revealed that green elements and local cultural aspects were present in the existing materials. Nevertheless, their integration remained inadequate. Green education topics, particularly climate change, greenhouse gases, the carbon cycle, the water cycle, pollution prevention, resource conservation, and renewable energy were insufficiently represented, while Local Culture Literacy dimensions appeared inconsistently and were rarely infused into reading comprehension activities. Furthermore, teachers expressed the need for English reading materials that integrate environmental issues and local cultural contexts aligning with CEFR B1 descriptors and Kurikulum Merdeka Phase E. The findings highlight the necessity of developing English reading learning materials that systematically infuse Green Education and Local Culture Literacy to enhance students' reading competence, environmental awareness, and cultural literacy.

ABSTRAK
Integrasi Pendidikan Hijau dan Literasi Budaya Lokal ke dalam pembelajaran Bahasa Inggris mendapatkan perhatian saat ini. Namun, penelitian yang mengkaji kebutuhan pengintegrasian kedua aspek tersebut ke dalam materi pembelajaran membaca Bahasa Inggris di Sekolah Menengah Kejuruan (SMK) masih terbatas. Penelitian ini bertujuan untuk mengkaji sejauh mana Pendidikan Hijau dan Literasi Budaya Lokal direpresentasikan dalam materi pembelajaran membaca Bahasa Inggris yang telah digunakan serta mengidentifikasi kebutuhan guru terhadap pengembangan materi yang kontekstual untuk siswa kelas 10 di Sekolah Menengah Kejuruan. Penelitian ini menggunakan pendekatan deskriptif kualitatif dengan pengumpulan data melalui analisis dokumen terhadap deskriptif kualitatif dengan pengumpulan data melalui analisis dokumen terhadap materi pembelajaran membaca Bahasa Inggris. Hasil penelitian menunjukkan bahwa unsur Pendidikan Hijau dan aspek budaya lokal telah tercantum dalam materi yang dianalisis. Namun demikian, integrasi kedua aspek tersebut masih terbatas. Topik Pendidikan Hijau, khususnya perubahan iklim, gas rumah kaca, siklus karbon, siklus air, pencegahan polusi, konservasi sumber daya, dan energi terbarukan, belum terwakili secara memadai, sedangkan dimensi Literasi Budaya Lokal secara tidak konsisten tercantum dan jarang diintegrasikan ke dalam aktivitas pemahaman membaca. Selain itu, guru menyatakan perlunya materi pembelajaran membaca Bahasa Inggris yang mengintegrasikan isu-isu lingkungan dan konteks budaya lokal serta selaras dengan deskriptor CEFR B1 dan Capaian Pembelajaran Kurikulum Merdeka Fase E. Temuan penelitian ini menegaskan pentingnya pengembangan materi pembelajaran membaca Bahasa Inggris yang

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secara sistematis mengintegrasikan Pendidikan Hijau dan Literasi Budaya Lokal guna meningkatkan kompetensi membaca, kesadaran lingkungan, dan literasi kebudayaan.

INTRODUCTION

Environmental issues remain one of the most urgent global concerns in the twenty-first century. Biodiversity loss, land degradation, pollution, climate change, and unsustainable resource use have intensified the demand for education that develops learners' ecological awareness, sustainability-oriented values, and capacity to participate in responsible action (UNEP, 2025; United Nations, 2023; UNESCO, 2024). Environmental education has been internationally promoted since the Belgrade Charter and the Tbilisi Declaration, which emphasized awareness, knowledge, attitudes, skills, and participation as foundational educational goals (UNESCO-UNEP, 1975; UNESCO, 1978). Nevertheless, continuing ecological degradation suggests that environmental knowledge alone does not automatically lead to responsible behavior. Hence, learning materials need to connect awareness with meaningful practice, reflection, and local relevance (Kristalinawati et al., 2019; Leung & Ng, 2019).

In the Indonesian context, environmental issues appear in various forms, including air pollution, deforestation, mining-related ecological damage, land conversion, flooding, waste problems, and marine pollution. Recent studies have highlighted ecological disruption related to mining in Raja Ampat, the displacement and deforestation risks connected to the new capital city development, and land-cover change in Riau Province (Juniyanti & Situmorang, 2023; Maspul, 2025; Niko, 2024). These realities make environmental learning a relevant concern for Indonesian classrooms. English language teaching, therefore, should not be separated from sustainability education, considering language classes can provide opportunities for learners to read, interpret, discuss, and respond to environmental problems beyond meaningful texts (Laaloua & Tamer, 2022; Raphael & Nandanan, 2024; Rudenko, 2023).

Within this context, Green Education has become a significant educational orientation. It is closely related to Environmental Education and Education for Sustainable Development as it aims to prepare learners to comprehend ecological issues and participate in sustainable action (Adnyana et al., 2023; Leung & Ng, 2019; UNESCO, 2024). In the present study, Green Education is operationalized through six pertinent elements adapted from UNESCO (2024), particularly weather, climate, and climate change; greenhouse gases; the carbon cycle; the water cycle; avoiding pollution and conserving resources; and renewable energy. These indicators are pedagogically relevant for English reading learning materials since they offer meaningful content through which students can enhance vocabulary, comprehension strategies, critical thinking, and environmental awareness simultaneously (Mohammed, 2024; Nakamura & Fujimoto, 2024; Seraj, 2024).

However, the integration of environmental themes into English language learning is not merely straightforward. Environmental topics may become overly scientific, abstract, or disconnected from students' lives if they are presented without familiar contexts, accessible language, and appropriate scaffolding (Derewianka & Jones, 2016; Tatin et al., 2024). This is where Local Culture Literacy becomes pivotal. Local culture enables students to approach English texts beyond cultural references, places, practices, values, communities, and figures that are closer to their lived experiences. Embedding local culture in English materials can strengthen students' motivation, identity, comprehension, and connection between new knowledge and personal experiences (Moran, 2001; Oktarina et al., 2022; Ratminingsih et al., 2020; Tantri & Santosa, 2024).

Local Culture Literacy in the present study is grounded in cultural dimensions, namely products, perspectives, communities, and persons (Moran, 2001). The mentioned dimensions help materials move beyond surface-level cultural information by addressing tangible cultural objects, social practices, beliefs and values, social groups, and individual culture identities. This framework is compatible with broader discussion of cultural literacy as knowledge, attitudes and communicative ability that allow learners to interpret cultural meanings and engage respectfully with diverse communities (Garcia-Mila et al., 2021; Hirsch, 1983; Saidah et al., 2025). In English reading classrooms, local culture can therefore function not merely as decoration but as a meaning-making resource which supports comprehension and reflective learning (Romrome & Ena, 2022; Sulistyaningrum, 2019).

Furthermore, reading is a strategic skill in English as a Foreign Language (EFL) learning since it gives students access to information, vocabulary, text structure, and social meanings. Reading comprehension ivolves the ability to identify main ideas, locate specific details, infer implicit meaning, interpret vocabulary in context, recognize discourse structure, and grasp communicative purposes (Brown, 2004; Kasim et al., 2020). For tenth-grade vocational school students, English reading materials should assist comprehension and reflect vocational relevance, environmental responsibility, and cultural identity. The CEFR B1 descriptors require learners to acquire various written texts for orientation, information, argument, correspondence, instruction, and leisure, while Kurikulum Merdeka Phase E emphasizes reading and viewing skills that encourage learners to interpret information and respond to texts meaningfully (Council of Europe, 2020; Kementerian Pendidikan dan Kebudayaan, 2022).

Effective materials development requires clear alignment between learning objectives, learners' needs, text types, tasks, language support, and real-world relevance (Nunan, 1988; Richards, 2001; Tomlinson & Masuhara, 2023). Materials for reading should expose learners to authentic and purposeful texts, provide suitable scaffolding, stimulate interaction, and encourage learners to transfer reading skills beyond classroom contexts (Masuhara, 2023; Mukundan et al., 2016; Tomlinson & Masuhara, 2023). In addition, genre-based perspectives indicate that different text types serve different communicative purposes, in which reading materials should include functional, descriptive, report, recount, exposition, and transactional texts that equip learners for diverse reading circumstances (Derewianka & Jones, 2016; Halliday & Matthiessen, 2014; Rosenblatt, 1988).

Previous studies have examined environmental education or local culture in English learning separately. Environmentally oriented studies have conducted ecological reading modules, digital language materials with environmental content, and examined environmental education in EFL textbooks (Krismayani et al., 2021; Ramadhan et al., 2021; Subiyanto et al., 2022; Tatin et al., 2024). Further, studies on culture have explored local culture-based efl materials, cultural literacy in instruction documents, local folktale booklets, and local culture integration in English classrooms (Haddina & de Napoli, 2022; Kasangke et al., 2025; Oktarina et al., 2022; Romrome & Ena, 2022; Sulistyaningrum, 2019). Nevertheless, studies that specifically examine the need to integrate both Green Education and Local Culture Literacy into English reading learning materials for vocational schools remain limited. This gap matters as vocational learners require materials that are contextual, culturally meaningful, environmentally relevant, and aligned with curriculum expectations (Jopalina et al., 2023; Pratama & Sumardi, 2022).

The present study investigates the need for integrating Green Education and Local Culture Literacy into English reading learning materials for tenth-grade vocational school students. This study addresses the following research question: To what extent are Green Education and Local Culture Literacy represented in existing English reading learning materials for tenth-grade vocational school students, and what are teachers' needs regarding the development of reading materials?

METHODS

This study employed a qualitative descriptive approach, in which this research method is appropriate when a study aims to provide a rich, straightforward, and contextual account of a phenomenon rather than to test statistical relationships (Sandelowski, 2000). This design was selected as the study sought to elucidate the representation of Green Education and Local Culture Literacy in existing English reading learning materials and to explore teachers' needs in relation to the development of contextualized materials. The approach is compatible with needs analysis since it allows researchers to examine both documents and participants' experiences as sources of instructional evidence (Brown, 1995; Creswell & Poth, 2018). The data were gathered beyond two techniques, such as document analysis and in-depth interviews. Document analysis is substantial for systematically examining written materials in order to examine patterns, themes, and meaning relevant to a research problem (Bowen, 2009). The document analysis in the present research was conducted on existing English reading learning materials implemented for tenth-grade vocational school students. The materials consisted of an English textbook entitled SPLASH Smart Path to Learning English for Grade 10 of SMK/MAK, and school-based handouts utilized by English teachers. Altogether, 40 reading materials were analyzed, including functional, exposition, descriptive, transactional, report, and recount texts.

The document analysis focused on three aspects. To begin with, the materials were investigated according to Green Education indicators adapted from UNESCO (2024), namely GE-1 weather, climate, and climate change; GE-2 greenhouse gases; GE-3 the carbon cycle; GE-4 the water cycle; GE-5 avoiding pollution and conserving resources; and GE-6 renewable energy. After that, the materials were examined utilizing Local Culture Literacy indicators adapted from Moran (2001), particularly LC-1 products, LC-2 practices, LC-3 perspectives, LC-4 communities, and LC-5 persons. Finally, the reading tasks were mapped against CEFR B1 reading categories, including reading correspondence, reading for orientation, reading for information and argument, reading for instruction, and reading as a leisure activity (Council of Europe, 2020).

In addition to document analysis, in-depth interviews were conducted with four English teachers who teach tenth-grade vocational school students. In-depth interviews were applied to support and contextualize the document analysis findings, considering they allow participants to explain their classroom experiences, perceived challenges, and recommendations in detail (Patton, 2015). The interview questions explored teachers' existing reading materials, students' reading difficulties, familiarity with Green Education and Local Culture Literacy, alignment with Kurikulum Merdeka Phase E and CEFR B1, and recommendations for future reading materials.

The data were examined qualitatively beyond data reduction, data display, and conclusion drawing (Miles et al., 2014). In the document analysis, the researcher identified, coded, and categorized the occurrence of Green

Education, Local Culture Literacy, and CEFR reading categories in the existing materials. The frequency and percentage of each category were then presented descriptively to reveal distribution patterns. Meanwhile, the interview data were observed thematically by identifying recurring ideas related to students' needs, teachers' practices, environmental and cultural content, reading skills, and material development recommendations (Braun & Clarke, 2006).

RESULTS AND DISCUSSIONS

A. Overview of Existing English Reading Learning Materials

The analysis identified 40 reading materials used for tenth-grade vocational school students. The materials consisted of various text types and reading purposes. Functional texts were the most dominant, followed by exposition texts, description texts, transactional texts, report texts, and recount texts. This distribution indicates that the existing materials emphasize practical communication and information-oriented reading, which is relevant to vocational school contexts. Functional texts are particularly pivotal in vocational education since they equip learners to read schedules, labels, announcements, invitations, advertisements, and workplace-related documents (Derewianka & Jones, 2016; Halliday & Matthiessen, 2014). However, the distribution indicates that more systematic integration of environmental and cultural content is needed across text types. The results are elucidated utilizing the table as presented (Table 1) below.

Table 1. Distribution of text Types in Existing English Reading Learning Materials

Text Type	Frequency	Percentage	Main Representation in the Materials
Functional text	17	42.5%	Schedules, labels, invitations, advertisements, and practical documents
Exposition text	7	17.5%	Sustainable Development Goals (SDGs), climate change, e-waste, marine pollution, and environmental issues
Descriptive text	6	15.0%	Tourism destinations, cultural heritage sites, and local places
Transactional text	6	15.0%	Dialogues on directions and future plans
Report text	3	7.5%	Hail, flooding, and marine debris
Recount text	1	2.5%	Personal or project-based environmental experience

The dominance of functional texts is understandable, as vocational school students need texts that are applicable to everyday, educational, and workplace communication. Nevertheless, the presence of exposition, descriptive report, and recount texts provides opportunities to incorporate broader environmental and cultural content. The limitation found in the materials was not the complete absence of Green Education and Local Culture Literacy. Instead, it is the lack of balanced, explicit, and systematic infusion across the materials. This supports the notion that effective reading materials should be intentionally designed, not merely accumulated from available texts (Nunan, 1988; Tomlinson & Masuhara, 2023).

Green Education in the Existing Reading Materials

The results reveal that Green Education (GE) was represented in 13 out of 40 reading materials, accounting for 32.5% of the total data. Most of these materials were found in the textbook, while only one item from the school handouts contained a Greed Education element. This indicates that environmental themes were present, but school-based materials still provided limited support for systematic environmental learning through English reading. Considering the urgency of climate action and sustainability education, such limited representation suggests a need to strengthen the environmental dimension of English reading materials (Leung & Ng, 2019; UNESCO, 2024). The findings are addressed in the following table.

Table 2. Green Education Representation in Existing Reading Materials

Indicator	Topic	Frequency	Percentage	Representation in the Materials
GE-1	Weather, climate, and climate change	2	12.5%	Limited representation, mainly through climate change-related texts
GE-2	Greenhouse gases	2	12.5%	Limited representation, mostly connected to climate change and emissions
GE-3	The carbon cycle	1	6.3%	Rare representation, connected to sustainable lifestyle or carbon footprint

GE-4	The water cycle	5	31.3%	Frequent but sometimes implicit through water-related phenomena
GE-5	Avoiding pollution and conserving resources	5	31.3%	Most dominant, represented through pollution, waste, conservation, and resources
GE-6	Renewable energy	1	6.3%	Rare representation, mainly through SDG 7 or renewable energy topics

The most frequently represented indicators were GE-4 and GE-5, each appearing five times. GE-4 appeared in materials discussing hydrological phenomena, flooding, hail, Sangiran Site, and mineral water. However, several materials were implicit, since they presented water-related contexts without directly explaining the water cycle. GE-5 was represented beyond materials on protected forests, e-waste, food awareness, marine pollution, and resource conservation. These findings suggest that the existing materials tend to emphasize practical environmental concerns, such as pollution prevention and resource conservation, which are accessible and relevant for learners (Laaloua & Tamer, 2022; Setyowati et al., 2022).

On the contrary, GE-3 and GE-6 were addressed only once. This is a limitation since the carbon cycle and renewable energy are essential components of Green Education and sustainability literacy. If students are repeatedly exposed only to pollution and water-related issues, their comprehension of environmental systems may remain partial. Green Education should assist learners in acknowledging interconnections among climate, greenhouse gases, carbon processes, water systems, pollution, resource use, and energy transition (Adnyana et al., 2023; UNESCO, 2024). Therefore, future English reading materials need to include balanced environmental topics, precisely those related to greenhouse gases, the carbon cycle, and renewable energy, while preserving language accessibility for vocational students.

B. Local Culture Literacy in the Existing Reading Materials

The analysis of Local Culture Literacy emphasized that cultural elements revealed in several materials. However, their distribution was uneven across the five cultural dimensions (Moran, 2001). LC-1, or cultural products, was the most dominant dimension, appearing in 27 out of 31 culturally relevant materials. LC-2, or cultural practices, appeared frequently as well. Nevertheless, LC-3 perspectives, LC-4 communities, and LC-5 persons were minimally represented. This pattern shows that existing materials mostly introduce tangible cultural objects, places, documents, and communicative practices, while deeper cultural values, community relationships, and individual cultural identities receive less attention. Such a pattern is consistent with textbook studies elucidating that culture is often presented as artifacts or factual information rather than as a holistic meaning system (Chao, 2011).

Table 3. Local Culture Literacy Representation in Existing Reading Materials

Indicator	Topic	Frequency	Percentage	Representation in the Materials
LC-1	Products	27	87.1%	Cultural heritage sites, tourism destinations, institutions, documents, and public facilities
LC-2	Practices	18	58.1%	Social communication, invitation, direction-giving, and everyday cultural practices
LC-3	Perspectives	2	6.5%	Limited discussion of beliefs, values, and attitudes
LC-4	Communities	1	3.2%	Minimal representation of cultural groups and relationships
LC-5	Persons	4	12.9%	Limited representation of cultural figures and individual identity

Descriptive texts in the textbook, specifically those discussing Borobudur Temple, *Kraton Ngayogyakarta Hadiningrat*, Tsunami Museum, Pink Beach, Sangiran Site, and Fort Rotterdam, strongly represent LC-1 due to the fact that they introduce cultural heritage sites and local places. Further, several materials represent LC-2 beyond social practices and communicative situations, including invitation letters and direction-giving dialogues. These

findings adress that Local Culture literacy is already visible in the materials; nevertheless, the representation is largely product-oriented. Local culture-based learning should connect product with practices, values, communities, and persons in order to enhance students' comprehension on the reasons why cultural elements matter (Moran, 2001; Ratminingsih et al., 2020; Tantri & Santosa, 2024).

The mentioned finding implies that Local Culture Literacy in the existing materials is still surface-oriented. Students may learn regarding cultural places and products, but they are not consistently guided to reflect on the values, beliefs, social relationships, and identities behind them. As cultural literacy includes the ability to interpret, appreciate, and communicate cultural meaning, reading materials should encourage learners to analyze cultural perspectives, community roles, and individual agency (Garcia-Mila et al., 2021; Hirsch, 1983; Saidah et al., 2025). Thus, future materials should expand local culture beyond tourism and artifacts by infusing cultural perspectives, communities, and persons into reading tasks and reflective activities.

C. CEFR B1 Reading Categories in the Existing Reading Materials

The existing reading materials were examined according to the CEFR B1 reading categories. The findings indicate that Reading for Orientation appeared most frequently, followed by Reading for Information and Argument. Reading as a Leisure Activity, Reading Correspondence, and Reading for Instruction appeared less frequently. This patter reveals that the materials mainly train students to locate and understand information, while other reading purposes receive less emphasis. The CEFR B1 framework expects learners to engage with a range of written texts. Hence, a balanced representation of reading purposes is significant to foster comprehensive reading competence (Council of Europe, 2020).

Table 4. CEFR B1 Reading Categories in Existing Reading Materials

Code	CEFR B1 Reading Category	Frequency	Percentage	Implication
C-1	Reading Correspondence	7	17.5%	Limited exposure to letters, messages, and written interaction
C-2	Reading for Orientation	33	82.5%	Dominant; students frequently locate key information
C-3	Reading for Information and Argument	18	45.0%	Moderate representation through factual and argumentative texts
C-4	Reading for Instruction	4	10.0%	Limited exposure to procedural and instructional texts
C-5	Reading as a Leisure Activity	8	20.0%	Limited representation of personal and enjoyable reading experiences

Although the materials generally correspond to CEFR B1 expectations, the uneven distribution of reading categories emphasizes the need for more varied reading tasks. Tenth-grade vocational school students should not only identify specific information but also interpret instructions, grasp correspondence, respond to arguments, and engage with texts for broader personal and social purposes. This need is particularly pivotal when reading materials are expected to incorporate Green Education and Local Culture Literacy, since environmental and cultural elements require comprehension, interpretation, reflection, and application, where reading instruction should therefore address both micro-level comprehension and macro-level communicative goals (Brown, 2004; Rosenblatt, 1988).

D. Teachers' Needs Based on In-Depth Interviews

The in-depth interviews with four English teachers supported the document analysis findings. The teachers reported that existing reading materials generally came from textbooks, PowerPoint slides, handouts, authentic materials, and teacher-developed materials adjusted to students' vocational majors. Additionally, they stated that reading activities regularly focused on identifying main ideas, finding detailed information, answering WH-questions, understanding vocabulary, identifying text structures, and drawing conclusions. These practices reflect common reading comprehension priorities, yet the interviews revealed the need for stronger vocabulary scaffolding, contextual materials, environmental topics, local culture, and curriculum alignment.

Table 5. Summary of teachers' needs Based on In-Depth Interviews

Theme	Teachers' Views and Needs	Implication for Material Development
Students' Reading Condition	Students still experience limited vocabulary, low confidence, and difficulty understanding English reading texts	Materials should include vocabulary scaffolding, clear instructions, and accessible B1-level texts.
Green Education	Teachers support environmental topics but stated that they are not yet consistently integrated into reading materials	Materials should systematically include climate change, pollution, conservation, water, carbon, and renewable energy topics
Local Culture Literacy	Teachers valuing local culture, but classroom practices mostly involve tourism destinations, traditional food, museums, and cultural projects	Materials should go beyond cultural products by including practices, perspectives, communities, and persons
Curriculum Alignment	Teachers stated that reading materials generally follow Kurikulum Merdeka Phase E, especially Membaca-Memirsa	Materials should align reading tasks with Phase E outcomes and CEFR B1 descriptors
Learning Support	Teachers recommended authentic texts, visual support, project-based activities, and major-related contexts	Materials should be multimodal, contextual, vocationally relevant, and reflective

Teachers strongly supported the integration of Green Education English reading materials. They viewed environmental education as essential to foster students' awareness of pollution, flooding, waste management, renewable energy, and sustainable habits. However, several teachers stated that environmental topics were often introduced verbally or through school projects rather than systematically embedded in reading materials. This confirms the document analysis finding that Green Education appears in the materials but remains uneven and insufficient. Further, it supports prior findings that EFL teachers may recognize the value of environmental content but still need more structured teaching resources (Laaloua & Tamer, 2022; Tatin et al., 2024).

Moreover, teachers emphasized the importance of Local Culture Literacy. They explained that local culture could be infused beyond descriptive texts regarding museums and tourism destinations, bilingual cultural infographics, traditional food advertisements, and projects related to Indonesian regions. Nevertheless, their suggestions mostly focused on cultural products and practices. This finding reveals that teachers acknowledge the value of local culture, but future materials should provide models which incorporate cultural perspectives, communities, and persons. Such integration may assist students connect English reading with their cultural identity and social context (Oktarina et al., 2022; Ratminingsih et al., 2020; Romrome & Ena, 2022).

In addition, there is a need of accessibility underlying vocabulary. Teachers repeatedly identified vocabulary as a major obstacle for tenth graders of vocational school. Consequently, even though CEFR B1 is an appropriate target level, materials should provide sufficient scaffolding through vocabulary previews, contextual clues, visuals, guided questions, and post-reading reflection. This is consistent with the view that materials should not simply expose learners to texts but should provide support that enables comprehension, interaction, and language development (Masuhara, 2023; Richards, 2001; Tomlinson & Masuhara, 2023).

E. Discussion

The findings of the present study reveal that the existing English reading learning materials already contain elements of Green Education and Local Culture Literacy, but the integration is not yet systematic. Environmental topics are mostly concentrated in a limited number of texts, especially those related to pollution, conservation, and water-related issues. Meanwhile, local culture is mostly represented beyond cultural products and practices. This condition indicates that the materials provide an initial foundation, but they do not yet offer comprehensive integration of environmental and cultural dimensions. In the context of materials development, this suggests a mismatch between the potential of English reading as a content-rich skill and the limited way sustainability and culture are currently embedded (Nunan, 1988; Tomlinson & Masuhara, 2023).

The imbalance in Green Education indicators is pedagogically significant. Sustainability education should not be reduced to pollution or waste topics alone because environmental literacy requires learners to understand

interrelated systems, including climate processes, greenhouse gases, carbon movement, water systems, resource consumption, and energy transition (Adnyana et al., 2023; UNESCO, 2024). When English reading materials provide only partial representation, students may develop fragmented awareness rather than systemic understanding. Thus, English reading materials should be designed to introduce environmental topics progressively and accessibly, using texts that match students' language proficiency while still developing critical ecological awareness (Mohammed, 2024; Nakamura & Fujimoto, 2024; Raphael & Nandanan, 2024).

Furthermore, the uneven representation of Local Culture Literacy has substantial implications. Existing materials often utilize cultural heritage sites and tourism destinations, but they rarely guide learners to examine cultural values, community relationships, or cultural figures. This tends to position culture as content to be recognized rather than meaning to be interpreted. Moran's (2001) framework elucidates that culture involves the interaction of products, practices, perspectives, communities, and persons. Therefore, materials should assist students in reading about cultural products while asking them to infer values, compare practices, identify community roles, and reflect on how individuals preserve culture and environment; this deeper cultural engagement is necessary for meaningful cultural literacy (Garcia-Mila et al., 2021; Hirsch, 1983; Saidah et al., 2025).

The results show that the existing materials tend to support practical reading skills, specifically locating information and understanding factual content. This is beneficial for vocational students, but reading instruction can be enriched by connecting comprehension tasks with environmental and cultural reflection. For instance, students can identify the main idea of a text regarding renewable energy, infer the value behind local conservation practices, compare cultural practices related to resource preservation, and reflect on how local communities respond to environmental issues. Such activities would assist both language development and value-oriented learning, in line with the transactional view of reading as an interaction between readers, texts, purposes, and contexts (Brown, 2004; Rosenblatt, 1988).

The needs investigated in the present research suggest that future English reading learning materials should be contextualized, which means that the materials should connect environmental issues with local cultural contexts and students' vocational realities. They must be balanced; wherein green education indicators and Local Culture Literacy dimensions should be represented proportionally. Additionally, the reading materials must be pedagogically scaffolded, in which they should provide vocabulary support, reading strategies, visuals, self-assessment, and reflective tasks to assist students in comprehending B1-level texts. This recommendation is aligned with materials development principles that emphasize authenticity, relevance, learner engagement, interaction, and transfer beyond the classroom (Nunan, 1988; Richards, 2001; Tomlinson & Masuhara, 2023).

Therefore, the infusion of Green Education and Local Culture Literacy should not be understood merely as inserting environmental and cultural topics into reading passages. It should involve systematic design of texts, tasks, questions, vocabulary support, multimodal elements, and reflection activities. In this way, English reading learning materials can enhance reading competence while also fostering environmental awareness and cultural literacy among vocational school students. Such integration is particularly pivotal in vocational education as students are being prepared for academic achievement and future professional and social participation in contexts shaped by sustainability challenges and cultural diversity (Jopalina et al., 2023; Pratama & Sumardi, 2022).

CONCLUSIONS

This study investigated the need to integrate Green Education and Local Culture Literacy into English reading learning materials for tenth-grade vocational school students. Utilizing a qualitative descriptive approach, the study analyzed existing English reading learning materials implemented in vocational schools and conducted in-depth interviews with English teachers. The findings revealed that Green Education and Local Culture Literacy were present in the existing materials, but their integration remained limited.

The document analysis addressed that Green Education appeared in 13 out of 40 materials, with stronger representation of water-related topics and pollution or resource conservation, while climate change, greenhouse gases, the carbon cycle, and renewable energy were less represented. Local Culture Literacy was mostly represented beyond cultural products and practices, while perspectives, communities, and persons appeared rarely. The CEFR analysis further indicated that the materials emphasized Reading for Orientation and Reading for Information and Argument more than correspondences, instruction, and leisure reading.

The teachers' interviews confirmed the need for English reading learning materials that are contextual, visually supported, vocabulary-rich, aligned with CEFR B1 and Kurikulum Merdeka Phase E, and relevant to students' vocational and cultural contexts. Further, teachers supported the integration of environmental issues and local culture, but the findings show that clearer and more systematic materials are needed to assist classroom implementation.

Therefore, it can be inferred that future English reading learning materials for vocational school students should systematically infuse Green Education and Local Culture Literacy through balanced topics, varied text types, accessible language, reading strategy support, multimodal resources, and reflective assignments. Such materials are expected to support students' reading competence while fostering environmental awareness and cultural literacy.

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