

INTEGRATION OF ECOLOGICAL LOCAL WISDOM IN GRADE VII JUNIOR HIGH SCHOOL INDONESIAN LANGUAGE COURSEBOOKS IN CENTRAL JAVA

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Abstract

This study analyses the representation of ecological local wisdom in three seventh-grade Indonesian language coursebooks used in junior high schools across Central Java, Indonesia. Adopting a qualitative design with a content analysis approach, the research examines textual and visual elements—words, phrases, sentences, paragraphs, and illustrations—within the coursebooks. Data validity was ensured through triangulation using multiple ecological and cultural perspectives. The study's novelty lies in its focus on the integration of ecological local wisdom within Indonesian language materials, a topic that remains underexplored in the Central Java context. The findings indicate that, although elements of local wisdom are present, their ecological dimensions are not explicitly articulated or systematically integrated into the learning materials. Moreover, the identified local wisdoms originate from various provinces—such as Riau, Yogyakarta, Aceh, West Java, East Nusa Tenggara, and Papua—rather than from Central Java itself. This geographical mismatch poses challenges for contextual learning among teachers and students in the region. The study concludes that developing regionally grounded and ecologically responsive Indonesian language coursebooks is essential to promote contextual literacy and strengthen students' ecological awareness.

Keywords: coursebooks, Central Java, ecological literacy, Indonesian language learning, local wisdom

Introduction

The history of humankind demonstrates that fears of an impending global energy shortage have proven unfounded. For instance, concerns over the depletion of fossil fuels such as petroleum have been mitigated through human innovation in alternative energy sources, including electricity and steam power, which replaced coal-based energy. This evolution indicates that the true existential threat to humanity lies not in an energy crisis but in environmental degradation. The planet currently faces severe ecological damage driven by climate change, global warming, non-degradable plastic waste, deforestation, and other destructive human activities (Harari, 2020).

According to the WorldRiskReport (Frege et al., 2023), Indonesia ranks second among countries with the highest disaster risk, following the Philippines (WRI 46.91), with Indonesia (WRI 41.13) and India (WRI 40.96) completing the



top three. The country's forests are also under alarming pressure, with deforestation between 2017 and 2021 averaging 2.54 million hectares per year—equivalent to six football fields per minute—placing Indonesia on the brink of a climate crisis. Forest degradation occurs across all regions, including Java, which loses approximately 22,000 hectares annually (Purba et al., 2018). Water ecosystems face similar threats as watershed areas are converted into residential zones or exploited by corporations, resulting in floods, sedimentation, and widespread droughts (KOMPAS, 2023).

These issues largely stem from human indifference toward the environment. As Ramlan et al., (2023) emphasize, ecological literacy must be instilled in younger generations, who will inherit an increasingly degraded planet. Ecological literacy involves understanding the reciprocal relationship between humans and nature, enabling individuals to interpret environmental systems and take appropriate actions to sustain or restore them (Roth, 1992). It encompasses four dimensions—knowledge, skills, affect, and behavior—with the ultimate goal of developing environmentally responsible citizens.

Previous studies highlight that integrating local wisdom into education significantly enhances students' conceptual knowledge and environmental literacy (Lubis et al., 2022). Wibawa and Awaliah (2023) argue that preserving indigenous knowledge related to biodiversity conservation requires community-based resource management integrated into local curricula. At the junior high school level, Suwandi et al., (2019) recommend embedding all components of environmental literacy within textbooks. Moreover, Toharudin et al., (2021) note that local wisdom-based learning can be effectively combined with technological advancements.

Building upon these findings, strengthening ecological literacy among junior high school students in Central Java can be achieved by utilizing local ecological wisdom rooted in the province's cultural practices. However, Suwandi et al., (2024) report that existing Indonesian language textbooks still lack sufficient emphasis on ecosystem preservation. Similarly, Suwandi et al. (2016) found that ecological literacy content in Indonesian language materials remains predominantly cognitive, neglecting affective, behavioral, and applied aspects.

Indonesian language learning at the junior high level not only develops linguistic competence but also serves as a medium for cultivating cultural and local values. Among these is ecological wisdom—understood as local knowledge, attitudes, and practices that maintain environmental balance. Integrating such wisdom into textbooks is crucial amid today's environmental crises, climate change, and ecosystem degradation. As the primary learning source, textbooks play a strategic role in fostering ecological awareness through narratives, folklore, descriptive texts, and visual materials that communicate messages of environmental stewardship.

Central Java, with its rich ecological traditions such as *sedekah bumi* (earth offerings), *sedekah laut* (sea offerings), and nature-related myths and legends, holds significant potential for integrating local ecological wisdom into Indonesian language learning. These traditions embody ecological values that can strengthen students' environmental literacy and reinforce cultural identity grounded in local wisdom. Nevertheless, the extent to which such integration exists in seventh-grade Indonesian language textbooks used in Central Java remains underexplored. Therefore, this study aims to analyze the integration of ecological local wisdom

within seventh-grade Indonesian language coursebooks used in junior high schools across Central Java.

Ecological Literacy in Education

Ecological literacy is essential in addressing current global environmental challenges, such as climate change, ecosystem degradation, and loss of biodiversity. Orr (1992) asserts that ecological literacy is a crucial foundation for education that supports sustainability. Ecological literacy helps individuals understand how their actions impact the planet and encourages them to behave responsibly towards the environment.

Goleman et al. (2012) emphasize the importance of ecological literacy in developing a generation capable of facing environmental crises. They identified that ecological literacy must be an integral part of the education system, from primary to higher education. In this case, ecological literacy education should not only focus on conveying scientific facts, but also on developing critical awareness and skills to take appropriate action in facing environmental problems. The implementation of ecological literacy in education requires a holistic and interdisciplinary approach. Ecological literacy education must integrate scientific knowledge with ethical values and sustainable practices in everyday life. Sterling (2010) suggests a transformative educational approach, in which ecological literacy is integrated into the curriculum to shape environmental awareness and the ability to take action.

In Indonesia, ecological literacy is becoming increasingly relevant in the context of education policies oriented towards character development and literacy. Through the development of digital textbooks that incorporate ecological literacy, students are expected to gain a deeper understanding of the importance of protecting the environment and applying ecological concepts in their daily lives. This is in line with global efforts to raise awareness and action on environmental issues. Ecological literacy is an important skill that every individual must have in order to understand and take action that supports environmental sustainability. This literacy includes knowledge, skills, attitudes, and actions oriented towards ecosystem preservation. The implementation of ecological literacy in education can help shape a generation that is more concerned about the environment and able to face global challenges related to environmental issues. In Indonesia, ecological literacy can be integrated with local wisdom to create a more contextual and relevant educational approach for the community.

Local Wisdom and Ecological Knowledge

Local wisdom represents a system of knowledge, values, and cultural practices that has developed over generations within a community as an adaptive response to its natural environment. According to Fatmawaty et al., (2023) local wisdom functions as a life philosophy that regulates harmonious relationships between humans, nature, and social life. In an ecological context, local wisdom not only encompasses cultural aspects but also presents ecological strategies passed down across generations to maintain the sustainability of natural resources.

Local ecological knowledge forms an essential component of the local wisdom system. Various studies show that indigenous communities possess effective environmental management mechanisms, including water conservation, forest protection, traditional agricultural management, and symbolic rituals that

serve to maintain ecosystem balance (Berkes, 2018). Wibawa and Awaliah (2023) emphasize that such local knowledge represents a form of ecological intelligence among traditional societies, enabling them to preserve biodiversity through sustainable practices.

The integration of local wisdom into education is regarded as having a positive impact on enhancing students' environmental literacy and ecological understanding. (Lubis et al., 2022) found that learning activities infused with the values of local wisdom can improve conceptual knowledge, cultural appreciation, and ecological awareness. From a pedagogical perspective, local wisdom-based learning positions learners' socio-cultural experiences as the foundation for understanding ecological concepts, making the learning process more contextual and meaningful.

Textbooks as a Medium for Ecological Education

Ecological literacy involves many disciplines because environmental issues are complex. Therefore, in order to instill an attitude of caring for the environment, stimulation is needed through a learning process that involves various subjects. Indonesian language subjects can be a means of strengthening ecological literacy in secondary school students. This is in line with the research by Neina et al. (2023) who states that efforts to preserve the environment can be made by integrating environmental values through Indonesian language lessons. This is reinforced by the Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 12 of 2024, which states that the total number of teaching hours (JP) per year for Indonesian language subjects at the junior high school level is the highest among other subjects, namely 216 JP. This means that Indonesian language subjects have a greater share in efforts to strengthen ecological literacy.

Sumarwati's (2022) Research results show that traditional ecological knowledge (TEK) by the communities on the slopes of Mount Lawu is utilized as a means of food security. Then Hosen et al. (2020) argues that the people of Sarawak, Malaysia, preserve traditional ecological knowledge through cultural festivals and oral traditions passed down from generation to generation as a guide for adapting to climate risks and enhancing socio-ecological resilience. Then, based on Acharibasam and McVittie's (2023) study, the results show that the cultural framework of local communities that respects, reciprocates, and takes responsibility for nature can be integrated into environmental education in schools because it has the potential to improve human relations with the environment. Research conducted Makondo and Thomas (2018) providing specific and contextual evidence of indigenous knowledge related to climate change adaptation. Integrating unique and specific indigenous knowledge into other knowledge can be one of the best ways to implement more effective and sustainable climate change adaptation strategies in certain indigenous communities.

Method

Research Context

The textbooks selected in this study were those used by students in Central Java province. Based on the observation results, three textbooks are used by students. All three textbooks refer to the same curriculum, namely the Merdeka

curriculum. The difference between the three textbooks is in their publishers; one book is published by the government, while the other two are published by non-government publishers. The following table shows the profiles of the three books analyzed.

Table 1. Coursebook Profile

Title of The Book (Code)	Curriculum	Publisher
<i>Bahasa Indonesia (BI)</i>	Latest curriculum	Government
<i>Mahir Berbahasa Indonesia (MB)</i>	Latest curriculum	Non-government (Erlangga)
<i>Cakap Berbahasa Indonesia (CB)</i>	Latest curriculum	Non-government (Yusdhistira)

Table 2. Summary of Methods

Aspects of data analysis	Methods of data analysis	Data source
Aspect of local wisdom	Determining six dimensions: 1) local knowledge, 2) local values, 3) local skills, 4) local resources, 5) local decision-making, 6) local group solidarity	Textual samples (introduction, texts, assignments, exercises, questions) from the three textbooks,
Aspect of ecological literacy	Determining four main dimensions: 1) ecological knowledge, 2) ecological skill, 3) ecological attitudes, 4) ecological actions	namely BI, MB, and CB

Data analysis

This study uses document analysis to analyze the data. The three textbooks listed in Table 1 were analyzed using the theories of local wisdom and ecological literacy. These two theories were used to cross-check the integration of ecological local wisdom content in Indonesian language textbooks for Grade VII in Central Java. The local wisdom analysis utilized Sudikan's (2013) theory of the six dimensions of local wisdom, namely local knowledge, local values, local skills, local resources, local decision-making, and local group solidarity. The ecological literacy analysis utilized McBride et al., (2013) theory of the four dimensions of ecological literacy, namely ecological knowledge, ecological skills, ecological attitudes, and ecological action.

The analysis unit of this study is a sentence or paragraph. To maintain its reliability, two raters analyzed the textbooks separately and then discussed them to determine suitability. Table 2 shows a summary of data analysis methods. In addition to document analysis, this study also conducted interviews with Indonesian language teachers of Year 7 junior high school students in Central Java province. This data was used for data triangulation of the teaching books. Sixteen teachers from eight schools were interviewed. These teachers had professional certification from the Indonesian Ministry of Education and Culture.

Findings and Discussion

The analysis results of three textbooks in Central Java Province, which were analyzed using Sumarwati's (2022) TEK theory, indicate that their ecological dimensions are not explicitly articulated or systematically integrated into the learning materials, although elements of local wisdom are present. Moreover, the

identified local wisdoms originate from various provinces—such as Riau, Yogyakarta, Aceh, West Java, East Nusa Tenggara, and Papua—rather than from Central Java itself. This geographical mismatch poses challenges for contextual learning among teachers and students in the region. A closer look at the analyzed data can be seen in the explanation below.

Local Wisdom Aspect

Local wisdom content is most prevalent in CB, followed by BI and MB. CB is the book that most successfully disseminates local wisdom, while MB has not given significant attention to local wisdom. The following table shows the frequency of local wisdom dimensions in the three textbooks.

Table 3. Frequency of local wisdom dimensions

Local Wisdom Aspect	BI	MB	CB
Local knowledge	15	5	32
Local values	2	1	2
Local skills	2	-	5
Local resources	3	-	7
Local decision-making	-	-	-
Local group solidarity	1	-	1

The frequency table above shows findings of local wisdom originating from various provinces in Indonesia. However, it is surprising that no local wisdom originating from Central Java was found, even though all three textbooks are used in the Central Java area. The following are examples of local wisdom found in the three textbooks.

Example 1. BI page 23

Angka tujuh menunjuk kepada tujuh arah gunung di sekitar desa yang dipercaya sebagai pelindung desa.

(The number seven refers to the seven directions of the mountains surrounding the village, which are believed to protect the village.)

Example 1 above shows the local knowledge of the people of East Nusa Tenggara Province (NTT) about mountains as protectors of their villages. NTT Province also appears in the MB book in relation to the rare Komodo dragon. The community has its own knowledge about Komodo dragons, as in the following excerpt from the book.

Example 2 MB page 21

Masyarakat setempat menyebutnya "ora" atau "buaya darat".

(The local community calls it "ora" or "land crocodile.")

Local knowledge in example 2 is demonstrated through the local naming of Komodo animals by the local community. Furthermore, an example of local wisdom in the CB book is contained in the content on the manufacture of Asmat tribe transportation tools in the form of dugout canoes, as quoted below.

Example 3. CB page 17

Seperti sama-sama kita ketahui, masyarakat suku Asmat terkenal dengan hasil ukirannya yang unik. Demikian halnya dalam pembuatan perahu lesung ini. Perahu lesung dikerjakan dengan teknik yang halus, diukir, dan dicat.

(As we all know, the Asmat tribe is famous for its unique carvings. This is also true of the construction of these dugout canoes. Dugout canoes are crafted using delicate techniques, carved and painted.)

Example 3 above shows the local skills of the Asmat people in the carving technique used to make dugout canoes. The Asmat tribe itself comes from the province of South Papua, which shows the diversity of the regions of origin of local wisdom in the textbooks used by students.

The frequency of the regions of origin of local wisdom contained in the books is shown more clearly in the following figure.

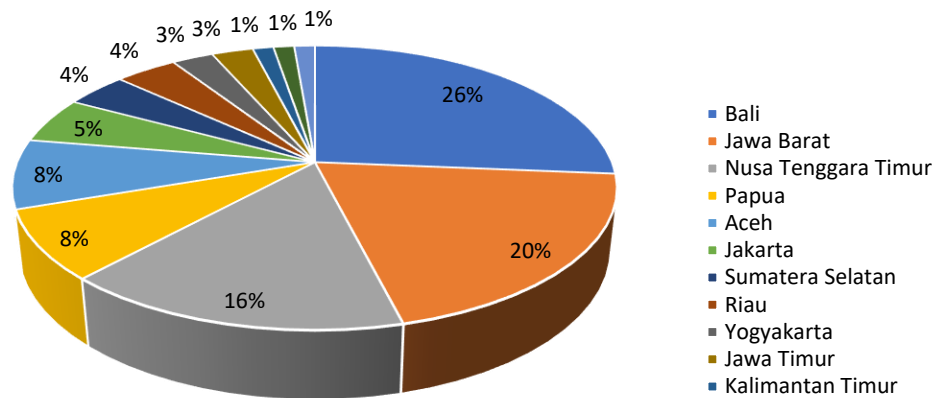


Figure 1. Distribution of Provinces Representing the Origins of Local Wisdom

In Figure 1, it can be seen that there is no local wisdom content originating from Central Java province. Most of the local wisdom content comes from Bali province, followed by West Java, East Nusa Tenggara, Papua, Aceh, Jakarta, South Sumatra, Riau, Yogyakarta, East Java, East Kalimantan, Maluku, and North Sumatra. The local wisdom content, which originates from various provinces in Indonesia, is in line with the target audience, namely all seventh-grade junior high school students in Indonesia. However, based on interviews with teachers in Central Java province, information was obtained regarding obstacles due to content originating from outside Central Java, namely that students had difficulty understanding the content. Teachers had to provide contextual understanding at the beginning of the lesson, which meant that additional time was needed for this.

Ecological Literacy Aspect

The dimension of ecological literacy was found in all three textbooks, and each book also contained the four dimensions of ecology, namely ecological knowledge, ecological skills, ecological attitudes, and ecological actions. Findings

on ecological literacy were not limited to content containing local wisdom, so the findings obtained were more numerous than those for content containing local wisdom. The frequency of the ecological dimensions in the three books can be observed in detail in the following table.

Table 4. Frequency of ecological dimensions

Ecological Literacy Aspect	BI	MB	CB
Ecological knowledge	25	66	27
Ecological skill	8	6	5
Ecological attitudes	14	9	8
Ecological actions	4	3	7

Previously, it was explained that local wisdom was most frequently found in CB and least frequently in MB. In terms of ecological literacy, it was most frequently found in MB, followed by CB and BI. Most of the data in each book was on the dimension of ecological knowledge. The following are examples of quotations containing ecological literacy in the three textbooks.

Example 4. BI page 106

"Kami melakukan kampanye dan pendampingan pembelajaran rehabilitasi mangrove hingga pengolahan makanan berbahan baku mangrove untuk meningkatkan ekonomi masyarakat pesisir," jelas Mahtub Murtiyoso yang menjadi Kemangteer (sebutan untuk volunteer KeSeMat)

"We conduct campaigns and provide guidance on mangrove rehabilitation and the processing of mangrove-based foods to boost the economy of coastal communities," explained Mahtub Murtiyoso, a Kemangteer (a term for KeSeMat volunteers)

Example 4 above is an example of ecological behavior contained in the news text material. Example 4 shows the actions of volunteers in a mangrove ecosystem study group in Central Java. Below is example 5 from MB.

Example 5. MB page 144

Sudah seharusnya kita semua berbondong-bondong mengulurkan bantuan kepada pengungsi banjir.

We should all come together to extend a helping hand to flood refugees.

The quotation in example 5 shows an ecological attitude, namely an appeal to help victims of natural disasters in the form of floods. The quotation is also contained in the news text material. Next is an example from the CB book as follows.

Example 6. CB page 174

Para murid diajarkan menanam mulai dari nol. "Kami bikin pupuknya dari kotoran kambing, kasih pupuknya, ditanam, terus cabuti rumput juga," ujar Melsa, siswi kelas 4 B SDN Bongan.

The pupils are taught how to plant from scratch. "We make fertilizer from goat manure, apply the fertilizer, plant the seeds, and then pull out the weeds," said Melsa, a Year 4 pupil at SDN Bongan Primary School.

Example 6 shows the dimension of ecological skills in the form of the ability to make fertilizer from animal manure. These ecological skills are also contained in the news text. Content that contains ecological literacy also comes from various regions in Indonesia, such as content on local wisdom. In addition, Central Java appears in the news text material about the actions of the mangrove ecosystem study group.

Ecological local wisdom in Indonesian language coursebooks in Central Java

The ecological literacy presented in BI appears to be separate from local wisdom. The ecological literacy in the book is presented without any connection to local wisdom, both in terms of knowledge and local practices in the area. This shows that local wisdom and ecological literacy in the textbook appear to be presented separately in different chapters and themes. As explained earlier, most of the local wisdom data is found in Chapter I, *Jelajah Nusantara* (Exploring the Archipelago), in the descriptive text material. Meanwhile, ecological literacy is mostly presented in Chapter IV, *Aksi Nyata Para Pelindung Bumi* (Real Action by Earth Protectors), in the news text material about environmental awareness and natural disasters. No text fully links local wisdom and ecological literacy in this textbook. Similarly, in MB, the presentation of material containing local wisdom is separate from ecological literacy. As with BI, MB does not yet present ecological literacy material based on local wisdom, either in the context of Indonesia or Central Java. Findings in CB show that there is ecological literacy data based on local wisdom, but the environmental context presented is outside the province of Central Java.

The findings of this study reveal several important issues related to the use of local wisdom and ecological literacy in Indonesian language textbooks in Central Java. First, the absence of Central Javanese local wisdom in the three textbooks indicates a disconnection between students and their immediate cultural environment. In fact, several studies in culture-based education (Al-Madia & Ichsan, 2022; Garrard, 2012) emphasize that cultural context is very important for developing learning engagement, conceptual understanding, and a sense of ownership of the learning material. Thus, the use of local wisdom from other provinces without presenting local culture has the potential to create pedagogical distance between students and the material.

Secondly, although Sumarwati's (2022) TEK theory emphasizes the importance of integrating ecological knowledge with local knowledge, the three textbooks still present these two elements separately. This pattern shows that the concept of local wisdom is not yet understood as an ecological entity that lives in the cultural practices of the community. Local wisdom is only positioned as descriptive cultural information, not as a source of ethics, practices, or ecological

strategies that can be transformed into learning. This indicates that the textbook approach has not adopted the "ecologically embedded local wisdom" paradigm, namely local wisdom as ecological knowledge practiced in the relationship between society and nature.

Third, the dominance of ecological literacy in MB compared to BI and CB indicates that ecological content tends to be directed towards instilling general environmental awareness. However, because it is not connected to the local cultural context, students' critical ability to read ecological issues based on their living space is still limited. Students learn only at the conceptual level, not in terms of ecological meaning in everyday life.

Fourth, the diversity of local wisdom in textbooks actually opens up opportunities for multicultural learning. However, without proper context, students find it difficult to understand local contexts that are far removed from their reality. Teachers also need to provide additional scaffolding to bridge this understanding. This situation shows that textbook-based learning has not yet achieved the principle of place-based education, which is learning that uses the local environment as a starting point for understanding global concepts.

Fifth, the analysis results show a general pattern that ecological literacy appears most frequently in news texts, while local wisdom is more often found in descriptive texts. This confirms that textbooks have not been designed for text selection based on integrative strategies, but rather based on text type. In fact, theme-based integration, rather than text type, can be more effective in linking the concepts of ecological literacy and local wisdom.

The findings of this study show that Grade VII Indonesian language textbooks have not fully utilized the potential of local ecological wisdom as a means of strengthening ecological literacy and introducing local culture to students. The gap between local wisdom content and ecological literacy indicates the need for a more context-sensitive textbook design based on ecolinguistics and ethnopedagogy theories. With this integration, Indonesian language learning will not only develop language skills but also shape stronger ecological awareness and cultural identity in students.

Conclusion

This study concludes that the three Grade VII Indonesian language textbooks used in Central Java Province have not comprehensively integrated local ecological wisdom in accordance with Sumarwati's (2022) TEK framework. Although local wisdom content is found in all three books, it originates from other provinces and does not feature the local wisdom of Central Java, thereby reducing the contextual relevance of the material for local students. This condition indicates a gap between the need for local culture-based learning and the content provided by national textbooks. Furthermore, although ecological literacy appears consistently through its four dimensions—knowledge, skills, attitudes, and ecological action—the presentation is not linked to local wisdom and is mostly placed in a national or other provincial context. The separation between local wisdom and ecological literacy indicates that textbooks have not adopted an integrative approach that views local wisdom as an inherent part of the ecological knowledge of the community. These findings emphasize the need for textbook designs that are more sensitive to the local context, particularly by presenting the local wisdom of Central Java, which contains

ecological values. The integration of local wisdom and ecological literacy has the potential to not only increase the relevance of the material for students but also strengthen culture-based learning, place-based education, and the formation of ecological awareness from an early age. Thus, the results of this study provide an important basis for curriculum policy development, textbook refinement, and further research on the integration of local ecological wisdom in Indonesian language learning.

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