

Language and Ecology in the Classroom: A Study of Environmental Discourse in Balinese Primary School Textbooks

I Gusti Ngurah Parthama¹, Ni Luh Kade Yuliani Giri², Ni Ketut Alit Ida Setianingsih³

^{1,3}English Department, Udayana University, Indonesia

²Japanese Department, Udayana University, Indonesia

e-mail: ngurah_parthama@unud.ac.id

Abstrak--The study explores the integration of ecolinguistics perspectives into Balinese language education by analyzing environmental themes embedded in sixth-grade primary school textbooks. The objective is to examine ecological concepts that are conveyed through linguistic units, specifically words and phrases, in the context of local language instruction. Employing a qualitative descriptive approach, the study analyzes three texts selected from the textbooks. Each represents different aspects of environmental education: waste management, environmental stewardship, and ecological responsibility. Data were collected through documentation methods and analyzed using semantic and contextual interpretation. It emphasizes the identification of positive and negative ecological associations. The results reveal that the textbooks contain a wide range of Balinese lexical and phrasal units related to environmental issues with clear semantic links to ecological concepts. These linguistic expressions do not only support language acquisition, but also foster ecological awareness and ethical reflection among students. The findings demonstrate that Balinese language learning materials can effectively promote environmental values when designed with ecolinguistics insights. The study contributes to the growing body of research on ecolinguistics in education and suggests the strategic role of local languages in cultivating sustainable environmental attitudes.

Keywords: *ecolinguistics, Balinese language, environmental education, lexical analysis, linguistic ecology*

Abstrak--Penelitian ini mengkaji integrasi perspektif ekolinguistik dalam pembelajaran bahasa Bali melalui analisis tema-tema lingkungan yang tertuang dalam buku ajar untuk siswa sekolah dasar kelas enam. Tujuan penelitian ini adalah untuk menelaah konsep-konsep ekologis yang disampaikan melalui satuan lingual, khususnya dalam bentuk kata dan frasa, dalam konteks pembelajaran bahasa daerah. Dengan menggunakan pendekatan deskriptif kualitatif, penelitian ini menganalisis tiga teks yang dipilih dari buku ajar, masing-masing merepresentasikan aspek berbeda dari pendidikan lingkungan, yaitu pengelolaan sampah, pelestarian lingkungan, dan tanggung jawab ekologis. Data dikumpulkan melalui metode dokumentasi dan dianalisis dengan interpretasi semantik dan kontekstual dengan penekanan pada identifikasi asosiasi ekologis positif dan negatif. Hasil penelitian menunjukkan bahwa buku ajar memuat beragam satuan lingual dalam bahasa Bali yang berkaitan dengan isu lingkungan dan memiliki keterkaitan semantik yang jelas dengan konsep ekologi. Ekspresi kebahasaan tersebut tidak hanya mendukung penguasaan bahasa, tetapi juga menumbuhkan kesadaran ekologis dan refleksi etis di kalangan siswa. Temuan ini menunjukkan bahwa pembelajaran bahasa Bali dapat secara efektif menanamkan nilai-nilai lingkungan apabila dirancang dengan pendekatan ekolinguistik. Penelitian ini memberikan kontribusi terhadap pengembangan kajian ekolinguistik dalam pendidikan dan menegaskan peran strategis bahasa daerah dalam membentuk sikap lingkungan yang berkelanjutan.

Kata Kunci: *ekolinguistik, bahasa Bali, pendidikan lingkungan, analisis leksikal, ekologi linguistik*

1. Introduction

In recent decades, environmental degradation has become a global concern. It is particularly with the escalating effects of climate change which illustrates the deteriorating relationship between humans and nature. While rapid scientific and technological advancements have facilitated human progress, they have also led to the overexploitation of natural resources (Kustiati, 2012; Tulalessy, 2018). It results in an increasingly asymmetrical interaction between humanity and the environment. Instead of maintaining harmony, modern societies often prioritize short-term economic gains. It neglects the long-term sustainability of ecological systems. Consequently, natural disasters such as landslides, floods, and droughts have become more frequent. It happens particularly in developing nations that rely heavily on natural resources for economic development. In contrast, developed countries have adopted more sustainable environmental policies. Against this backdrop, fostering ecological awareness is critical. Education must be positioned as a foundational platform for cultivating environmental consciousness from an early age (Mbeta, 2015, 2017; Yuniawan, 2016).

In response to these challenges, environmental education must be introduced not merely as an isolated subject, but also as an integrated theme across various learning domains. Early childhood and primary education present strategic opportunities to instill environmental values. Through curriculum design, young learners can be exposed to simple meaningful environmental actions such as waste sorting, tree planting, water conservation, and care for animals (Kustiati, 2012; Susanto, 2019). These actions do not only cultivate ecological responsibility, but also promote a sense of interconnectedness between humans and the natural world. As Suherman et al. (2019) argue, a new paradigm of education rooted in conservation is needed to address natural resource challenges. Such a paradigm encourages practical and values-driven actions that can lead to a more sustainable coexistence with the environment. In this respect,

language education, especially when linked to ecological themes, offers a rich and meaningful platform for embedding environmental values in daily learning (Mbeta, 2017).

One such context for integrating environmental themes is through local language instruction. In Bali, the Balinese language remains an essential component of cultural identity and is actively taught from primary to secondary education as part of the local content curriculum (Arta, 2018; Tulalessy, 2018). Integrating environmental topics into Balinese language lessons allows learners to interact with familiar linguistic forms while engaging with relevant ecological content. The approach aligns with the ecolinguistics perspective which emphasizes the reciprocal relationship between language and the environment. Mbeta (2015) asserts that language learning should be environmentally grounded and allowing students to explore the biodiversity and cultural richness embedded in their linguistic environment. Language becomes not only a tool of communication, but also a medium for ecological understanding. Moreover, as Susanto (2019) suggests, the collaboration between language education, governmental policy, and environmental preservation can be effectively realized through school-based programs such as the Adiwiyata initiative which integrates education and environmental stewardship.

The study responds to the following research problems: (1) How are environmental topics presented as learning materials in Balinese language education? and (2) What Balinese lexical items related to the environment are found in these learning materials? These questions are addressed by examining Balinese language teaching materials for primary school students. The general solution lies in the strategic use of local languages as an entry point for fostering environmental awareness among students. When students learn about environmental concepts in their native language, the material resonates more deeply. Thus, it improves comprehension and internalization of environmental values. Language becomes a bridge that links ecological knowledge with the learners'

sociocultural realities (Afrianti et al., 2021; Yuniawan, 2016).

Specifically, the study investigates the linguistic units, both at the lexical and phrasal levels, contained within environmental-themed Balinese language materials. By identifying and analyzing these units, the study seeks to reveal language that serves not only as a communicative function, but also as a semantic conduit for ecological associations. The analysis includes both positive and negative environmental connotations (Nurdiyanto et al., 2022; Tulalessy, 2018). It allows for a more nuanced understanding of students in perceiving and internalizing ecological meanings. The use of Balinese words and phrases related to environmental topics thus becomes a pedagogical strategy to promote ecological awareness and responsibility (Arta, 2018).

The research builds upon several key studies in the field of ecolinguistics and environmental education. Mbete (2015) foregrounds the role of language in fostering environmental understanding. It emphasizes the representation of biodiversity and linguistic diversity in educational materials. Tjendani (2020) highlights the significance of ecolinguistics in foreign language planning. It also notes environmental awareness that can be integrated into language competencies. Tulalessy (2018) underlines the importance of ecological intelligence. It proposes that environmental-themed texts can develop cognitive and emotional capacities in students. Nurdiyanto et al. (2022) explore eco lexicons related to pigeons in Banyumas and reveal local ecological knowledge that is linguistically encoded and can enrich language learning. Mantiri and Handayani (2018) examine indicative sentence modes in environmental news with emphasizing the role of constructive language in shaping readers' ecological attitudes. These studies provide theoretical and empirical support for the current research which situates its analysis within the intersection of language, ecology, and pedagogy.

The article aims to discuss environmental themes which are embedded in Balinese language

teaching materials and to identify the linguistic units, particularly words and phrases, related to environmental topics. The novelty of the current study lies in its focus on the dual function of language as both an educational tool and an ecological medium in local language instruction. While previous research has explored ecolinguistics applications in foreign language education or environmental media, the study uniquely situates its analysis in the context of a local language curriculum in which students' linguistic familiarity enhances ecological learning outcomes. The scope of the study is limited to sixth-grade primary school Balinese language materials. It focuses on textual data drawn from reading passages and dialogues. By analyzing the semantic associations of environmental lexicons, both positive and negative, the study offers insights into language learning which can serve as an instrument for ecological education at the grassroots level.

2. Research Method

The study employed a qualitative descriptive approach to examine the linguistic units related to environmental themes in Balinese language teaching materials. The data were derived from textbooks used in sixth-grade primary school classes. It specifically focuses on materials from the first and second semesters. The selection of these materials was based on their inclusion of environmental content. It appears in the end-of-semester assessment section of the first-semester textbook and in theme 8 entitled *Bumiku* (My Earth) in the second-semester textbook. The textual data encompassed both narrative and dialogue-based materials in Balinese that explicitly address environmental topics such as nature conservation, waste management, and ecological awareness.

Data collection was conducted through documentation methods. It was supported by several techniques including close reading, note-taking, and classification. The close reading technique was applied to scrutinize the content of the selected textbooks. It allowed the researchers to identify and extract relevant lexical items and

phrases associated with environmental themes. Note-taking was used to systematically record the occurrences of Balinese environmental lexicons, while classification was carried out by organizing the identified data into thematic subcategories. These subcategories were based on specific environmental aspects reflected in the linguistic units, such as waste, water, air, flora, and fauna. The methodological framework enabled a focused and structured examination of environmental content that is embedded in Balinese language instruction at the primary school level.

The data analysis was conducted using a qualitative descriptive method. It involved both linguistic categorization and interpretative analysis. The identified linguistic units, including words and phrases, were analyzed in terms of their semantic content and ecological relevance. Lexical meanings were cross-referenced with entries from the Balinese dictionary to ensure accuracy and contextual validity. Moreover, the study investigated the presence of positive and negative associations within the identified linguistic items. It aimed to understand such associations that contribute to students' comprehension of environmental issues. By employing the analytical approach, the study aligned with the principles of ecolinguistics which emphasize the interplay between language and environmental awareness in educational contexts. The method also ensured that the analysis remained grounded in both linguistic evidence and pedagogical application.

3. Results and Discussion

3.1 Results

The analysis of Balinese language learning materials for sixth-grade students revealed the presence of diverse linguistic units, both lexical and phrasal, that are thematically connected to environmental issues. Three primary data texts extracted from the textbooks were analyzed to uncover the extent to which ecological concepts are embedded in the language content. Each text illustrates different aspects of environmental education including waste management, nature conservation, and environmental responsibility. It

conveys through culturally and linguistically relevant expressions in Balinese. These expressions carry both positive and negative associations that contribute to students' understanding of environmental values. It supports the notion that language serves as a medium for ecological awareness (Mbeté, 2015; Tulalessy, 2018).

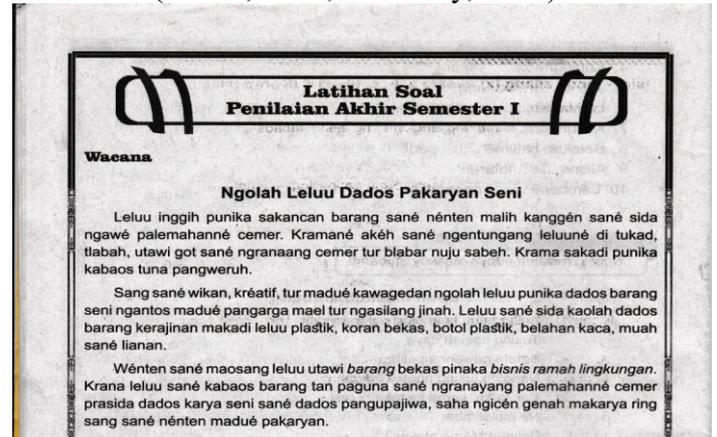


Figure 1. The first data text in Balinese reading material

The first text entitled *Ngolah Leluu Dados Pakaryan Seni* (Transforming Waste into Art), focuses on waste management and creative recycling. Linguistic units in the text consist of lexical items such as *leluu* (waste), *cemer* (polluted), *blabar* (flood), and *palemahan* (land for cultivation), as well as phrasal expressions like *ngentungang leluune* (throwing waste), *ngolah leluu* (processing waste), and *leluu plastik* (plastic waste). These units carry ecological meanings, with positive associations found in *ngolah leluu* and *palemahan* which denote proactive environmental practices. In contrast, negative associations emerge from units such as *cemer*, *blabar*, and *leluu plastik*. Those units indicate environmental degradation. The contrastive semantic load of these expressions facilitates the students' ability to distinguish environmentally responsible behavior from harmful actions. It then supports ecolinguistics learning objectives (Susanto, 2019).

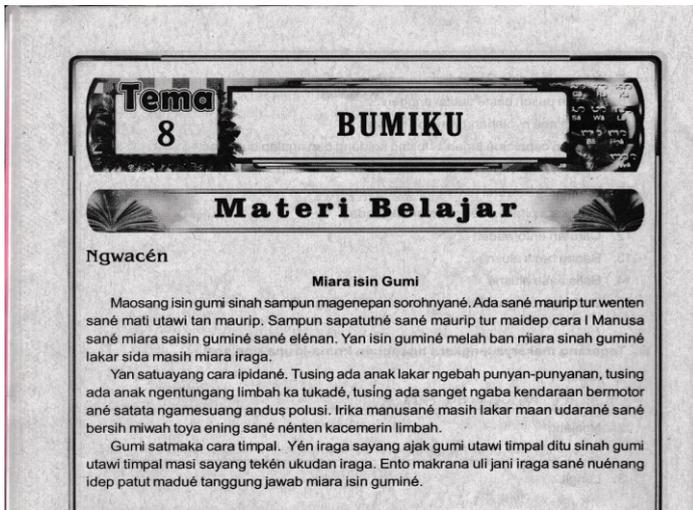


Figure 2. The second data text in Balinese reading material

The second text, *Miara Isin Gumi* (Caring for the Earth and Its Contents), explores the broader concept of environmental stewardship. The linguistic data in the text is dominated by phrasal expressions including *isin gumi* (earth and its contents), *ngebah punyan* (cutting trees), *ngentungang limbah* (disposing of waste), *andus polusi* (air pollution), *udara sane bersih* (clean air), and *toya ening* (clean water). Positive ecological associations are embedded in *isin gumi*, *udara sane bersih*, and *toya ening* which reflect ideals of ecological balance and sustainability. Conversely, negative associations arise from *ngebah punyan* and *andus polusi*. Those two represent environmentally harmful actions. These linguistic structures do not only reinforce the content of environmental ethics, but also reflect a pragmatic dimension. Learners are invited to internalize and enact the values conveyed through language (Tjendani, 2020). The text supports the development of ecological intelligence by fostering emotional and cognitive engagement with environmental topics (Tulalessy, 2018).

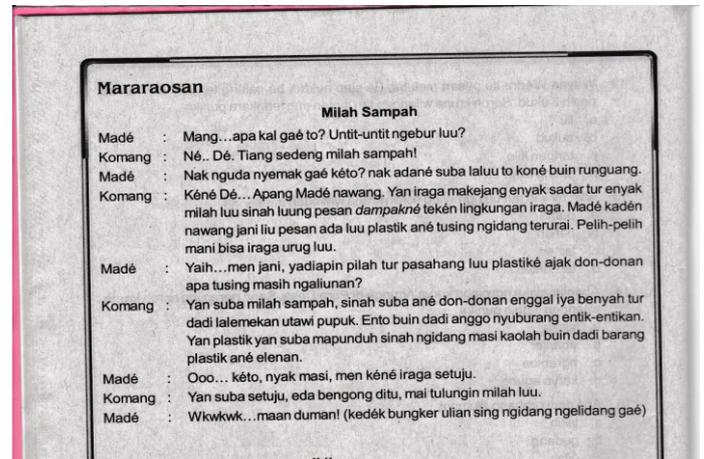


Figure 3. The third data text in Balinese conversation material

The third text, *Milah Sampah* (Sorting Waste), presents a conversational dialogue emphasizing environmental responsibility through waste separation. The analysis identifies both lexical items, such as *pilah* (sort), *pisahang* (separate), and *lalemekan* (fertilizer), and phrasal expressions like *milah sampah* (sorting waste), *luu plastik* (plastic waste), *urug luu* (burying waste), and *nyuburang entik-antik* (fertilizing plants). Positive associations are evident in *milah sampah*, *pilah*, and *nyuburang entik-antik*. It emphasizes responsible waste handling and sustainable practices. On the other hand, negative associations are linked to *luu plastik* and *urug luu* which highlight non-sustainable waste practices. The dialogue format enhances the learners' interactive engagement and promotes practical language use while embedding ecological concepts. As ecolinguistics research suggests the integration of environmental discourse in everyday language education strengthens students' linguistic competence alongside their ecological awareness (Mantiri & Handayani, 2018; Nurdianto et al., 2022).

Collectively, the three texts demonstrate the pedagogical value of incorporating ecolinguistics content into local language instruction. The diversity of linguistic units, whether in lexical or phrasal form, offers students exposure to environmental concepts rooted in cultural and

linguistic familiarity. The analysis underscores the role of language in shaping ecological attitudes. It supports the idea that language education can serve as a strategic platform for environmental literacy. By enabling students to associate words and phrases with either constructive or destructive environmental behaviors, the materials provide both cognitive tools and affective engagement necessary for fostering sustainable values from an early age.

3.2. Discussion

The findings of the study reaffirm the importance of incorporating ecolinguistics content into language education. It is particularly through the use of local languages such as Balinese. As demonstrated in the three selected texts from the sixth-grade Balinese language curriculum, linguistic units as both lexical and phrasal carry significant semantic and pragmatic functions that are strongly tied to environmental themes. The presence of both positive and negative ecological associations in these units exemplifies language functions that do not only as a communicative medium, but also as a vehicle for ecological understanding. According to Mbete (2015, 2017), language learning that is grounded in environmental contexts facilitates learners' ability to restore and strengthen their interrelation and interdependence with the natural world. The study's data support the perspective by showing learners who engage with environmental knowledge through culturally embedded expressions in their native language.

In the first data set, the focus on waste processing in *Ngolah Lelu Dados Pakaryan Seni* exemplifies the pedagogical integration of ecological action through linguistic expression. The presence of terms such as *ngolah lelu* (to process waste) and *palemahan* (land for cultivation) reflects positive ecological behaviors and aligns with Tulaessy's (2018) emphasis on ecological intelligence. The cognitive and emotional awareness of the environment fosters through language and education. These expressions allow students not only to comprehend the literal

meanings of the words, but also to understand the broader implications of environmental conservation. Conversely, the inclusion of negatively associated terms such as *cemer* (polluted) and *lelu plastik* (plastic waste) enables learners to identify detrimental environmental practices. The dual representation enhances their ecological sensitivity and supports value-based language acquisition.

The second text, *Miara Isin Gumi*, further extends the ecological discourse by introducing more abstract and comprehensive environmental concepts. Phrases like *isin gumi* (the earth and its contents) and *toya ening* (clean water) convey the idea of environmental interconnectedness and sustainability. These expressions resonate with the perspective offered by Tjendani (2020) who contends that ecolinguistics contributes to the sustainability of cultural and linguistic diversity while promoting environmental consciousness. By portraying the earth as a 'companion' to humans. The text reinforces a harmonious human–nature relationship and encourages learners to reflect critically on their ecological responsibilities. Meanwhile, negatively connoted expressions such as *ngebah punyan* (cutting trees) and *andus polusi* (air pollution) serve as linguistic tools for problematizing environmental degradation. The combination of positive and negative representations functions as a discursive mechanism for ethical reflection and ecological awareness-building.

In the third text, *Milah Sampah*, the conversational format introduces a dialogic dimension to ecolinguistics learning. The format does not only reflect realistic social interactions, but also models environmentally responsible behaviors in everyday speech. Lexical units like *pilah* (to sort), *pisahang* (to separate), and *lalemekan* (fertilizer) suggest active engagement with ecological practices and reinforce constructive language use. Nurdiyanto et al. (2022) emphasize the importance of eco lexicons in language learning. It is particularly those grounded in local ecological knowledge. Their study on pigeon-related eco lexicons in Banyumas reveals culturally

specific environmental terms that enrich linguistic diversity and serve as educational tools. Similarly, in the present study, Balinese environmental lexicons such as *nyuburang entik-entik* (fertilizing plants) offer learners culturally relevant pathways to engage with ecological knowledge. It supports the broader goal of building environmental literacy through local language curricula.

The classification of linguistic units into positive and negative ecological associations, as found across the three texts, aligns with the ecolinguistics framework that values the semantic and ethical implications of language. As Mantiri and Handayani (2018) argue, language use, particularly in the form of indicative constructions, can influence readers' ecological attitudes. Constructive expressions encourage protective behaviors towards nature, while destructive expressions raise awareness of harmful actions. The texts analyzed in the current study show a predominance of constructive language use. It suggests a deliberate pedagogical orientation towards fostering ecological stewardship among students. Moreover, the presence of negatively connoted terms does not serve to normalize harmful behavior, but rather to provide contrastive awareness that sharpens students' moral and cognitive engagement with environmental issues.

The study also reveals the linguistic structures of the Balinese language that contribute to ecological education in contextually meaningful ways. By employing words and phrases that are familiar to learners and embedded in their sociocultural setting, the materials enhance comprehension and promote internalization of environmental values. It reflects Suherman et al.'s (2019) call for a conservation-oriented educational paradigm that emphasizes real-world application and long-term ecological impact. The use of native language enables learners to make direct connections between language forms and environmental phenomena in their immediate surroundings. This proximity of language and lived experience is crucial for transforming environmental education from abstract theory into actionable knowledge.

The analysis highlights the critical role of local languages in advancing ecolinguistics objectives within school curricula. The integration of environmental themes into Balinese language instruction supports the development of ecological awareness, linguistic competence, and cultural identity. The use of linguistic units with clear ecological associations, whether positive or negative, provides learners with the tools to interpret, evaluate, and act upon environmental issues through language. It reinforces the idea that language education, particularly when grounded in local linguistic and cultural resources, can serve as a powerful platform for ecological learning and transformation. Future studies may explore comparative analyses across different regional languages or delve deeper into the cognitive and affective impacts of ecolinguistics learning on students in diverse educational settings.

4. Conclusion

The study has demonstrated the pedagogical potential of integrating ecolinguistics perspectives into local language instruction. It is specifically through the analysis of Balinese language textbooks for sixth-grade students. The presence of ecological themes, expressed through both lexical and phrasal linguistic units, reveals language can serve not only as a medium for communication, but also as a tool for developing environmental awareness. Each of the three analyzed texts presents a distinct environmental focus, waste management, ecological preservation, and environmental ethics, embedded in culturally and linguistically familiar contexts. These texts offer both positive and negative associations and enable learners to critically engage with environmental issues to cultivate an understanding of sustainable and unsustainable practices through language.

The findings reinforce the arguments of previous scholars who underscore the relevance of language in promoting ecological intelligence (Tulalessy, 2018), conserving linguistic and biological diversity (Mbeti, 2015), and embedding ecological values in everyday expressions

(Nurdiyanto et al., 2022). Furthermore, the use of indicative constructions with constructive and destructive tones (Mantiri & Handayani, 2018) provides learners with path of perspectives on environmental behavior and its consequences. By employing linguistically grounded representations of environmental practices, the study emphasizes the significance of language education as a means of instilling long-term ecological values. The close link between linguistic familiarity and ecological understanding affirms the value of local languages as effective vehicles for environmental education.

The research contributes to the growing field of ecolinguistics by highlighting culturally specific language materials that can function as strategic instruments for ecological learning. It also opens pathways for further investigation. Future studies may explore comparative analyses between local languages in different regions. It examines students' cognitive and emotional responses to ecolinguistics content or assess the long-term impact of ecolinguistics education on behavior and environmental decision-making. As the need for sustainable education becomes increasingly urgent, studies such as this underscore the importance of language in shaping not only what students know, but the way they think, feel, and act toward the environment.

5. References

- Afrianti, I., Wahyuni, N., & Rusdin, R. (2021). Pembelajaran Berbasis Lingkungan untuk Menambah Penguasaan Leksikon Bahasa Inggris Mahasiswa. *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)*, 2(4), 150–157. <https://doi.org/10.54371/ainj.v2i4.97>
- Arta, E. P. (2018). Pemertahanan Kosakatabahasa Bali Bidang Pertanian :Kajian Ekolinguistik. *Kalangwan Jurnal Pendidikan Agama, Bahasa Dan Sastra*, 8(2). <https://doi.org/10.25078/klgw.v8i2.972>
- Kustiati, P. (2012). Lingkungan Sebagai Sarana Pembelajaran Bahasa Indonesia. In A. Subyanto, Muallimin, & Prihantoro (Eds.), *Language Maintenance and Shift II* (p. 296). Master Program in Linguistics, Diponegoro University in Collaboration with Balai Bahasa Jawa Tengah.
- Mantiri, G. J. M., & Handayani, T. (2018). DAMPAK EKOLOGIS PENGGUNAAN KALIMAT INDIKATIF PADA MEDIA MASSA ONLINE PAPUA : TINJAUAN EKOLINGUISTIK KRITIS Ecological Impact of Indicative Sentence Using Critical Ecolinguistics Study Grace J . M . Mantiri dan Tri Handayani Universitas Cenderawasih PENDAH. *Ranah: Jurrnal Kajian Bahasa*, 7(2), 146–163.
- Mbete, A. M. (2015). Masalah Kebahasaan Dalam Kerangka Pelestariannya: Perspektif Ekolinguistik. *Seminar Nasional Sehari Pemetaan Bahasa Manokwari*, 181–188.
- Mbete, A. M. (2017). Pembelajaran Bahasa Berbasis Lingkungan: Perspektif Ekolinguistik. *RETORIKA: Jurnal Ilmu Bahasa*, 1(2), 352–364. <https://doi.org/10.22225/jr.1.2.40.352-364>
- Nurdiyanto, E., Resticka, G. A., & Yanti, S. N. H. (2022). EKOLEKSIKON BURUNG MERPATI SEBAGAI SUPLEMEN PEMBELAJARAN BAHASA BERBASIS LINGKUNGAN :. *Semiotika*, 23(1), 1–13.
- Suherman, S., Giyanti, S., & Anggraeni, S. P. K. (2019). Mural Di Lingkungan Sekolah Dalam Konteks Pendidikan Konservasi. *Refleksi Edukatika : Jurnal Ilmiah Kependidikan*, 9(2). <https://doi.org/10.24176/re.v9i2.3303>
- Susanto, R. U. (2019). Integrasi Konsep Adiwiyata Berbasis Ekolinguistik di Lembaga Pendidikan Kabupaten Jombang. *Discoveri: Jurnal Ilmu Pengetahuan*, 04(02), 472–480. <https://ejournal.unhasy.ac.id/index.php/discovery/article/view/461>
- Tjendani, E. N. (2020). Ekolinguistik dalam Perencanaan Pembelajaran Bahasa Asing di Indonesia. In I. N. Laba (Ed.), *Linguistik Terapan Dalam Berbagai Perspektif* (1st ed., pp. 1–203). Penerbit Yaguwipa.
- Tulalessy, Q. D. (2018). Pembelajaran Bahasa Berbasis Lingkungan Sebagai Upaya Membangun Kecerdasan Ekologis. *Jurnal Triton Pendidikan*, 1(1), 51. <https://doi.org/10.30862/jtp.v1i1.795>
- Yuniawan, T. (2016). Model Wacana Berwawasan Nilai-Nilai Konservasi Berbasis Ekolinguistik Sebagai Pengayaan Materi Ajar Mata Kuliah Pendidikan Lingkungan Hidup. *Jurnal Penelitian Pendidikan*, 33(2), 189–195.