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Ecopedagogical approaches to language learning and cultivating eco-conscious learners

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Abstract

This paper explores how integrating ecological philosophy and ecolinguistics within teaching strategies can shape learners' attitudes toward the environment and enhance language learning. The project "In Your Own Backyard" involves English language learners in tasks that connect learning with nature. Learner-generated texts are created and analyzed using Ecolinguistic Discourse Analysis (EDA) to classify them as ecologically beneficial, ambivalent, or destructive. Learners also participate in student-led discourse analysis to evaluate these texts. Exploratory findings reveal a significant shift in learners' ecological orientation, with a notable increase in eco-beneficial texts and a decrease in eco-destructive texts. Quantitative data showed improved English proficiency among participants, while qualitative findings highlighted high levels of student satisfaction and engagement. The project demonstrated that integrating ecopedagogy and ecolinguistic discourse analysis in language learning can enhance both environmental awareness and language skills, fostering a deeper connection to nature and critical thinking competencies.

Keywords: *Language Learning; Ecopedagogy; Ecosophy; Ecological Discourse Analysis; Ecolinguistics*

1. Introduction

The theoretical framework of this paper builds on the fundamental principles of ecological philosophy and ecolinguistics. Ecological philosophy combines "a normative set of principles and assumptions about relationships among humans, other forms of life and the physical environment" (Stibbe, 2015, p. 202). It prompts evaluation of human impact in the global ecosystem against a criterion of sustainable harmony (Alexander & Stibbe, 2014, p. 9). Ecolinguistics, more specifically, focuses on "the role of language in the life-sustaining interactions of humans, other species, and the physical environment" (IEA, 2024). Ecolinguistic

scholars ask how the symbolic verbal practices of humans affect their interaction with the physical environment and other living organisms (Steffenson & Fill, 2014, p. 9). They also seek to orient human language practices towards normative patterns that promote sustainability and safeguard delicate ecological systems (Alexander & Stibbe, 2014, p. 109). Ecolinguistics responds to the recognition that "language does not passively reflect reality; language actively creates reality… [it] shapes experience and transforms our perceptions into meanings" (Halliday cited in Law & Matthiessen, 2023, p. 65). Accessing ecological philosophy through a lens of ecolinguistics makes the abstract concepts of the discipline more tangible and accessible to everyone who uses interacting domains of language.

More specific to the context of language learning in higher education, the theories and practical approaches of ecopedagogy and ecological discourse analysis can be used to integrate ecological concepts in the classroom and beyond. Often attributed to Paulo Friere and his concept of praxis as a strategy of "reflection and action upon the world in order to transform it" (1970, p. 51), ecopedagogy promotes equity and sustainability in the context of social and environmental ecologies to bring justice and harmony to environmental and social systems (Goulah & Katunich, 2020, pp. 2-3). Ecopedagogy in the context of teaching English to speakers of other languages (TESOL) means incorporating a sensory-rich, ecologically-based, and emotionally-considerate approach by integrating all domains for effective language learning (University of Madison, Wisconsin, 2020, p. 12). This approach provides opportunities for learners to take part in dialogue that addresses climate and social justice, such as reflective exercises on the learners' place in the natural ecosystem and society. Another student-centered approach empowers the learner as a discourse analyst (Stibbe, 2015, p. 202), giving them the tools such as the evaluation of appraisal, framing, foregrounding and backgrounding, erasure, agency, and metaphor to evaluate narratives in consideration of their ecological stance (Penz & Fill, 2022, p. 239; Shamaieva et. al., 2023, p. 141). Cheng (2022) explains how Ecological Discourse Analysis (EDA) encourages producers and receivers of language to examine "the stories we live by" and to consider the extent to which nature appears as ecological property. Language learners, guided by a framework of ecological philosophy, can determine whether narratives communicate beneficial (harmonious), ambivalent (not conscious), or destructive (parasitic) relationships with the natural environment. Guided by ecological philosophy, this paper examines how integrating ecological perspectives within teaching strategies can shape learners' attitudes toward the natural environment and enhance language learning. It aims to 1) assess how ecological philosophy and ecolinguistics influence learners' environmental orientation through analysis of learner-produced texts, and 2) explore how ecopedagogy and ecological discourse analysis can enrich second language learning in higher education.

2. Project Description

2.1. Production of Learner Texts

2.1.1. Description of learner participants

The data for this study corresponds to the ongoing project "In Your Own Backyard" and has been compiled using data from 79 high school English language learners from Polish schools in Koluszki, Puszcza Mariańska, and Łódź with a parallel control group of 29 undergraduate English language learners from the University of Puerto Rico at Cayey who produced learner texts and completed analysis of peer texts. Students in the Polish public high school system were in 9th, 10th, and 11th grades, preparing for the national matriculation exam in mixed-ability groups. Their English language levels varied from A2 to B2 in the Common European Framework of Reference for languages (CEFR). The 79 Polish students involved in the project came from diverse backgrounds and regions of Poland including rural communities (Puszcza Mariańska), small townships (Koluszki) and urban centers (Łódź). Student profiles varied in a fairly even distribution, including students focused on natural sciences and the humanities. The 29 undergraduate English language learners attending the University of Puerto Rico at Cayey were all first-year students enrolled in an intermediate English class, required for those who scored 540-640 on the College Board Entrance Exam. The 29 students involved in the project came from diverse socioeconomic backgrounds with significant representation of students from families with modest incomes who qualified for the PELL scholarship. Students mostly came from the catchment area of the university with a high representation of rural communities (e.g., Monte Llano) and small townships (e.g., Cidra). Undergraduate profiles included a high representation of students majoring in the natural sciences and the social sciences, reflective of the wider student population.

2.1.2. Production of learner texts

The project began with a questionnaire collecting ethnographic data on students' status as English learners, their relationship with nature, and project expectations. Over 10 meetings and 5 units, students engaged in tasks that connected language learning with nature. For example, in a community garden task, students raked leaves and practiced using sensory description and figurative language to describe their actions. In another unit, learners were asked to describe their commute to school and then juxtapose their real-life observations with their ideal commute. Then the participants took an online carbon footprint calculator and made a final judgement on weighing the importance of transportation to a place against the ecological impact they have on the planet. These, along with all other units, called for learners to address their real-life interactions with the world in the context of their impact on the world, or in other words, reflecting in ecopedagogical praxis. In each unit, students used online web-based word processing software to draft multimedia texts that integrated the language skills targeted during

the tasks. For example, after tasks related to figurative language and sensory description, students were asked to choose a favorite food and describe it using the five senses and integrating comparative analogy, metaphor or simile. Interaction among students and the instructor was supported through online comments, allowing discussion and motivating learners to improve their work. In addition to descriptive writing, elements of structuring sentences, paragraphs, and evaluative language were included to support both English for academic purposes and general language syntax and phrasing. The focus on standard language skills aligned the project with the established curriculum for both high school and post-secondary level English classes focused on communication for academic purposes. At the end of the project, students completed an exit questionnaire reflecting on their personal experience and the success of the project.

2.2. Analysis of Learner Texts

2.2.1. Ecolinguistic Discourse Analysis

Learner-generated texts are analyzed by the instructor using Ecolinguistic Discourse Analysis (EDA), described by Wu (2018, pp. 646–647) as critical examination of language from an ecological perspective. Wu details a strategy of EDA that identifies the use of framing, metaphor, simile, analogy, symbolism, foregrounding, backgrounding, actor, agency, and appraisal to reveal the explicit and implicit discourses present in the text. Texts were also analyzed in terms of their expressions of ecological property, which are then measured against expressions of sustainability and the ecological philosophy of "diversity and harmony, interaction and coexistence" (Cheng, 2022, p. 189). Overall, the qualitative analysis focused on whether representations of nature in learner texts promote biodiversity, symbiosis, and sustainable coexistence with the more-than-human world, and how they change over time. Each learner text was then classified as either ecologically beneficial, ecologically ambivalent, or ecologically destructive.

2.2.2. Student-Led Discourse Analysis

After determining the viability of the first two stages of the project focused on learner text generation and ecolinguistic analysis, in the third stage of the project, undergraduate students were trained in ecolinguistic discourse analysis. This stage was completed with the 29 undergraduate English language learners from the University of Puerto Rico at Cayey. They first generated learner texts to understand the project context, then analyzed each other's texts using ecolinguistic methods. To simplify the process, students were given an easier version of the EDA, asking them to review learner-generated texts in four areas: 1) Framing Devices—identifying familiar ideas used to present new ones, such as symbolism or metaphor; 2) Foreground and Background—highlighting what is prominent and what is less emphasized; 3) Appraisal Items—identifying direct judgments or opinions; and 4) Actor/Participant Roles—

noting what actions people in the text or image are doing or talking about. Students then used a color-coded 15-point scale to evaluate the extent that the learner text was either pro-nature (green) or anti-nature (red). This scale was then used to classify the text as either ecologically beneficial, ecologically ambivalent, or ecologically destructive, see Figure 1.

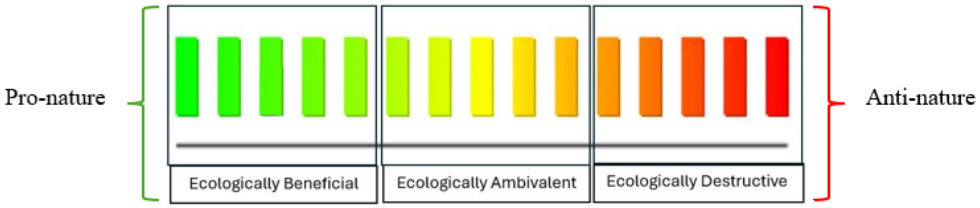

Figure 1. Color-coded 15-point scale used with students to classify the ecological status of the learner text

2.3. Analysis of language proficiency

Methods for assessing learners' language competencies varied by educational context and course. In Poland, high school students' English proficiency was measured using the standard and extended versions of the English section of the Polish national secondary matriculation exam. Their results were compared with peers not involved in the ecopedagogical project. In Puerto Rico, English proficiency was assessed based on the INGL 3103 “Intermediate English” syllabus, comparing project participants with previous cohorts and other course sections. All project participants completed entry and exit surveys to measure engagement, satisfaction, and self-evaluation of language competencies. Instructors also continuously monitored engagement and language competency through formative evaluations in both face-to-face and online modality.

3. Exploratory Findings

Trend analysis in the ongoing project is divided into two sections that respond to the project aims to 1) assess how ecological philosophy and ecolinguistics influence learners’ environmental orientation through analysis of learner-produced texts, and 2) explore how ecopedagogy and ecological discourse analysis can enrich second language learning in higher education. The mixed methodology generated both quantitative and qualitative findings.

3.1. Ecological Orientation in Learner-Produced Texts

Quantitative findings based on instructor-led ecolinguistic discourse analysis of high school English language learners’ texts revealed that there was a significant reduction in ecologically ambivalent narratives over ten meetings and that eco-beneficial texts increased in inverse proportion to the decrease of eco-destructive texts. In response to the first writing prompt in unit

1, 62% of learner-produced texts were eco-ambivalent, compared to only 24% in response to the last prompt (see Figure 2). An increase in ecologically beneficial texts over time is shown in the data, with texts corresponding to prompt 1 (unit 1) indicating that 23% of respondents composed an ecologically beneficial text, and by the last prompt, 72% of learners composed eco-beneficial texts. A comparative decrease in ecologically destructive texts over time is also shown in Figure 2, with analysis corresponding to prompt 1 indicating that 15% of respondents composed an eco-destructive text, but by the last prompt, only 4% of learners composed eco-destructive texts. Refer to Table 1 for a breakdown of numbers and corresponding percentages that determined the trends represented in Figure 2.

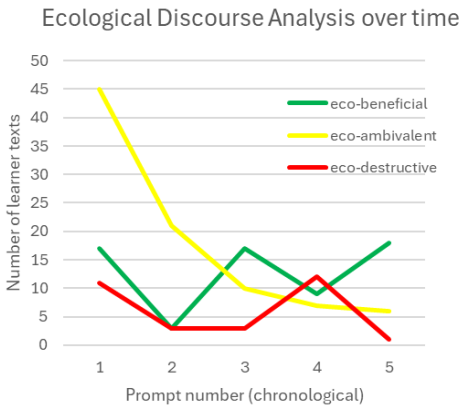

Figure 2. Line graph showing the number of learner texts classified as either ecologically beneficial, ecologically ambivalent, or ecologically destructive over time by the chronological sequence of prompts (1-5) based on instructor-led EDA of high school English language learners' texts (n=79)

3.2. Enhancing Language Learning with Ecopedagogy

3.2.1. Improved English proficiency

Quantitative data based on formal evaluations of high school and undergraduate English language learners reveals increased levels of achievement after participation in project activities. For example, learners who participated in the production of learner texts at Puszcza Marianska, Poland, seemed to benefit from the project in terms of their matriculation exam. Compared with other groups in their graduation year that did not take part in the project, learners scored an average of 83% compared to 66% in the English standard exam and also showed improvements in the extension exam and speaking exam. The undergraduate students who participated in the student-led ecological discourse analysis at the University of Puerto Rico also demonstrated increasing levels of English proficiency as a result of project participation. The EDA analysis, compared to a previous analytical task completed by the same group of students, showed a 2-point percentage increase over time from 88% to 90%. Instructor-led formative evaluation also indicated increasing levels of oral confidence and class engagement over the duration of the project.

Table 1. Data table (corresponding to the Figure 1 line graph) indicating the number of learner texts classified as either ecologically beneficial, ambivalent, or destructive by the chronological sequence of prompts (1-5) with totals and averages indicated, based on instructor-led EDA of high school English language learners' texts (n=79)

Prompt #	# of responses (n=79)	eco-beneficial		eco-ambivalent		eco-destructive	
1	73	17	23%	45	62%	11	15%
2	27	3	11%	21	78%	3	11%
3	30	17	57%	10	33%	3	10%
4	28	9	32%	7	25%	12	43%
5	25	18	72%	6	24%	1	4%
Total #	183	**64**		**89**		**30**	
Average %			**39%**		**44%**		**17%**

3.2.1. Student satisfaction and engagement

Qualitative findings from exit questionnaires among learners revealed high levels of comprehension of ecological philosophy and satisfaction with language-learning. Learners in Polish high schools showed that most (83%) understood that language influences behavior, and one participant realized: "Through using teaching methods related to nature, we were shown that we need to take care of it." Learners also highlighted the value of learning in their own ecology and commented that nature is not abstract, but "something local surrounding us." High school learners also expressed satisfaction regarding academic competencies, shown in comments like "My language skills really increased." Similarly, the undergraduate learners at the University of Puerto Rico found the EDA analysis beneficial for critical thinking and connected ecological philosophy to broader concepts like lifestyle, mental health, and political policy. They learned strategies for critical analysis and connected the relevance of ecological philosophy to individualism, for example, one student recognized, "Thinking that people are independent of nature is a misconception. We actually need nature more than it needs us." Another commented, "This assignment has taught me [a] process of critical analysis [that has] helped me view the text from different angles." Overall, learners enjoyed the project and found its activities enriching both academically and personally.

4. Discussion

4.1. Ecological Orientation in Learner-Produced Texts

Over the course of the project, eco-pedagogical strategies shifted learners' attitudes positively, reducing ambivalent and destructive views in alignment with theoretical insights from

ecological philosophy. There was a 49% increase in ecologically beneficial narratives, a 38% reduction in ambivalent narratives, and an 11% decrease in destructive narratives, reflecting the impact of ecopedagogical praxis, which uses sensory-rich language learning to encourage reflection on students' immediate ecology. Prompts encouraging participants to track their carbon footprints reinforced the idea that ecological impact is within their control, rather than a distant issue. This aligns with ecolinguistic literature suggesting that the stories we live by influence behavior (Halliday, 1990, in Law and Matthiessen, 2023, p. 65). By the end of the course, learners demonstrated a stronger sense of agency and a shift toward more sustainable attitudes, supported by exit questionnaires and ecological discourse analysis. However, prompt four revealed an anomaly, showing a 43% increase in eco-destructive narratives, likely due to its direct focus on consumer habits, with 57% of learners explicitly acknowledging the need for change. Exit questionnaire trends further indicated that learners embraced the idea that language influences behavior, as Halliday notes: "language has the power to shape our consciousness…and manipulate their environment" (2001, p. 180). By the end, learners overwhelmingly viewed nature as "home" and expressed a strong sense of shared responsibility, reflecting Paulo Freire's praxis of "reflection and action upon the world in order to transform it" (1970, p. 51), evident in their use of collective pronouns like "our," "us," and "we" in the exit questionnaire.

4.2. Enhancing Language Learning with Ecopedagogy

Increased levels of learner achievement related to language competencies may be a direct result of their engagement and satisfaction with the project and its environmental immediacy. For example, the learners at Puszcza Marianska who saw a 17% average increase in English standard exam compared to students not involved in the project also reported a consistent sense of positivity during project activities. It is also notable that most students in the standard exam stream typically have less exposure to English and experience lower motivation to learn it. In contrast, teacher evaluations from Tanski Public High School in Puszcza Marianska highlighted how students developed intrinsic motivation and a collaborative mindset through tangible outcomes, like garden harvests and growing vegetation, rather than relying on grades (M. Drazikowska, personal communication, September 29, 2024). At the University of Puerto Rico, student-led EDA proved effective not only in revealing attitudes toward natural ecology but also in teaching critical thinking skills. Integrating the eco-pedagogical and ecolinguistic theories of scholars like Arron Stibbe, Arne Naess, Ming Cheng, and Changchen Ha fosters multi-disciplinary spaces that help students address growing eco-anxiety. Bhaskaran and Muralidharan note that this anxiety is particularly prevalent among young people who feel overwhelmed by the rapid pace of climate change and guilty about their perceived powerlessness (2025, p. 61). Yet, in this context of potential despair, multi-sensory expressions emerged as key indicators of effective language learning and increased mental health, as students in the project expressed meaningful emotional response with nature foregrounded in

the articulation of their experiences. From a teaching perspective, evaluations suggest that learner achievement stems from being immersed in meaningful contexts of language learning and use.

4.3. Challenges

Although we believe that the results of this study are reliable and replicable, we acknowledge the challenges that may have impacted the data. One challenge was the consistency of lessons. For instance, in Poland, lessons were conducted at varying intervals when the researcher was available to volunteer to teach at participating institutions, which was further complicated by a period of medical leave and heavy workload. Given this situation, there were sometimes inconsistent timetables for completion and different modalities between lessons for different groups. Another challenge was completion of exercises since not all learners finished their work. Specifically, in Puerto Rico, undergraduate participants sometimes missed class and were not responsible for completion of the generation of their own texts or analysis of each other's texts. To mitigate the effect of such challenges, future work could integrate strategies for more consistent lesson schedules and build in procedures to strive for full participation.

5. Conclusion & Closing Thoughts

This project achieved its aims to 1) assess how ecological philosophy and ecolinguistics influence learners' environmental orientation through analysis of learner-produced texts, and 2) explore how ecopedagogy and ecological discourse analysis can enrich second language learning in higher education. Our data and analysis show that student engagement with the project and its ecopedagogical praxis not only increased environmental awareness and the production of eco-beneficial texts but also increased levels of learner achievement related to language competencies. The relevance of these findings is significant in a world where humans are becoming increasingly disconnected from the natural world due to a growing detachment from the sensory experiences that link us to our interdependent ecology (Abram, 2012, p. 22). This disconnection is furthermore reinforced by recurring narratives of consumption. By engaging with nature and enabling learners to critically examine the narratives they (re)produce, we can re-establish a conscious connection to our ecosystem. The "In Your Own Backyard" project draws from ecosophy to emphasize the importance of addressing ecologically harmful language in communication and education. We propose that through eco-pedagogical strategies for composition and critical analysis, learners can develop language competencies whilst also returning to fundamental human values inspired by principles of diversity, harmony, and coexistence with nature. This study will be of interest to educators, linguists, environmentalists, and researchers focused on ecological pedagogy and language learning. Its relevance extends to those seeking innovative methods to integrate ecological awareness into educational practices. By highlighting the intersection of language and environmental consciousness, this research

contributes to broader discussions on sustainable education and the role of language in shaping our relationship with nature.

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