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EFFECT OF ECO-LINGUISTIC ACTIVITIES ON ENVIRONMENTAL AWARENESS AND VOCABULARY ACQUISITION OF EARLY-AGE SCHOOL CHILDREN IN LAGOS STATE

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Abstract

This study investigated the impact of eco-linguistic activities on environmental awareness and vocabulary acquisition in early-age children. Justified by the need for innovative educational strategies, it employed an experimental mixed-methods design. Forty children (5-7 years) from a Lagos nursery school underwent a 12-week intervention of eco-storytelling, songs, and drama. Pre- and post-tests using a reliable instrument (Cronbach's α=0.78) quantified results. Findings demonstrated a statistically significant improvement. A paired-samples t-test revealed a substantial mean gain of 18.50 points in vocabulary scores (t (9) = -4.585, p = 0.001). Environmental knowledge also increased markedly; understanding of terms like "reuse" rose from 34% to 85%. The study concludes that eco-linguistic activities are highly effective. It recommends integrating these practices into early childhood curricula and providing teacher training to foster a generation that is both linguistically proficient and environmentally responsible.

Keywords: Eco-Linguistic, Early Childhood, Education Environment, Vocabulary

INTRODUCTION

Vocabulary development in childhood is a critical foundation for broader cognitive endowments and integrating environmental themes with language learning represents an opportunity for dual achievement. While research into environmental education and vocabulary acquisition has predominately focused on cognitive outcomes such as knowledge retention and vocabulary breadth less attention has been paid to affective or

behavioural results. However, as stated by Chawla (2020), fostering an emotional bond with nature is critical for motivating ecologically sustainable behaviour.

Language learning is not solely a cognitive process but also one of emotionality and sociability (Mihai et al., 2022). This gap, referring to the neglect of affective and behavioural dimensions, underscores the need for a more holistic approach in both research and practice concerning eco-linguistic activities. Eco-linguistics is a promising interdisciplinary field that sharpens the focus on the relationship between language and ecological consciousness, investigating how language shapes perceptions, values and behaviour toward the natural world. Eco-linguistic activities are designed to develop ecological understanding while simultaneously enhancing linguistic competencies. This dual focus is especially relevant in the foundational years of education a critical period for cognitive, linguistic and social development where children are highly impressionable and receptive to acquiring both knowledge and values (Drablos & Stave, 2023). At this stage, children are particularly responsive to experimental and interactive learning approaches.

Most eco-linguistic activities, such as storytelling, singing, games and practical environmental projects, enable young learners to connect language acquisition to real-world ecological issues. For example, while planning trees or discussing the effects of pollution, children learn new vocabulary and grasp the importance of environmental stewardship as suggested by Lekk (2019). This approach aligns with modern educational paradigms that emphasise active learning and cross-disciplinary integration. Global ecological challenges like climate change, deforestation and pollution provide a compelling rationale for cultivating environmental awareness early on forming the bedrock for a future generation of environmentally responsible citizens.

Studies indicate that early-age schooling is an ideal platform for introducing environmental concepts as children who understand ecological principles early are more likely to adopt sustainable behaviours later in life (Chawla, 2021). Eco-linguistic activities effectively bridge the gap between abstract ecological concepts and their practical applications making learning both relatable and effective. Vocabulary acquisition is a pillar of language development and literacy and research confirms that vocabulary is best learned in context through meaningful themes and activities.

Eco-linguistic activities employ this principle by embedding new vocabulary within engaging and relevant ecological contexts (Agbeleoba et

al., 2025). For instance, learning about biodiversity introduces terms like habitat, species and conservation which simultaneously enrich lexical knowledge and environmental understanding (Katunich, 2019). This method fosters both linguistics skills and critical thinking. The early years are a formative period for instilling a lasting ecological imprint ensuring the development of lifelong eco-friendly habits. According to Wells and Lekies (2006), childhood exposure to nature is particularly influential in shaping supportive environmental attitudes and behaviours in adulthood.

Through eco-linguistic activities, children not only learn about the environment but also develop emotional attachments to it, which enhances their motivation to care for it (Davari & Ghorbanpour, 2025; Yu & Sim, 2023). These activities provide a rich context for vocabulary development as children learn new words directly related to their experiences. Hands-on activities, children not only learn about the environment but also develop emotional attachments to it, which enhances their motivation to care for it. These activities provide a rich context for vocabulary development as children learn new words directly related to their experiences. Hands-on activities, such as studying a garden, allow children to learn and apply terms like photosynthesis, habitat or recycle to real-life situations, resonating with the constructivist theory that emphasizes the role of activity-based experience in knowledge acquisition.

Furthermore, eco-linguistic activities promote communication skills as children describe, discuss and ask questions about their experiences. This enhances vocabulary acquisition and aligns with the goal of holistic education to develop well-rounded individuals. As highlighted by Chawla (2021) integrated approaches that combine environmental and linguistic objectives support both the academic and social development of children. Early childhood is a period of rapid growth where new ideas are readily absorbed. Learning environmental concepts during this stage nurtures curiosity, empathy and a sense of responsibility toward the natural world. Sobel (2004) argues that early exposure increases the likelihood of a child maturing into an environmentally conscious adult. Incorporating environmental themes into school curricula allows children to perceive themselves as contributors to environmental stewardship fostering a sense of agency and care. It also cultivates critical thinking skills as they learn to analyse issues like pollution, climate change and deforestation.

The benefits of environmental awareness extend to holistic child development. Beyond cognitive gains, it incorporates emotional and social

elements by fostering cooperation, empathy for diverse school grounds help children connect abstract knowledge to concrete actions, deepening their understanding of ecological principles (Chawla, 2016). Environmental awareness is a crucial component of sustainable development and early childhood education presents a critical opportunity for its cultivation.

Introducing environmental education at school helps shape ecological attitudes while children's habits and worldviews are still forming. Research indicates that eco-linguistics activities such as environmental storytelling, outdoor explorations and nature-related art projects help children see themselves as part of the environment, fostering greater awareness and concern for ecological matters than traditional pedagogies. In this context, Chawla (2021) notes that hands-on-activities like tree planting, gardening and waste recycling campaigns are highly effective in raising children's environmental awareness.

MacGregor (2019) reports that thematic instruction with environmental content effectively introduces new vocabulary to young learners. Terms like pollution, habitat and recycles are acquired more rapidly and retained longer when presented through activity-based learning such as storytelling and collaborative problem-solving. A study by Umansky et al. (2022) examined the impact of eco-linguistic storytelling on early-grade learners. Children engaged with stories about nature conservation and animal behaviours and results showed significantly higher recognition and use of target vocabulary compared to peers taught through traditional methods. Despite this potential, eco-linguistic activities remain underexplored in early childhood education, particularly in regions with limited resources or ecological programming such as Nigeria. Challenges include rigid curricula insufficient teacher training and a lack of materials. Therefore, this study examines the effect of eco-linguistic activities on environmental awareness and vocabulary acquisition among early-age school children in Lagos State.

METHOD

This study employed an experimental design to investigate the effect of eco-linguistic activities on the environmental awareness and vocabulary acquisition of early-age school children. This approach was selected because it allows for the establishment of a causal relationship between variables, which is essential for determining the specific impact of the intervention (Schjoedt et al., 2025). The design enabled the control of extraneous

variables, ensuring that any observed effects could be attributed to the eco-linguistic activities rather than other factors. It also permitted the manipulation of the independent variable (eco-linguistic activities) and the measurement of its effect on the dependent variables (environmental awareness and vocabulary acquisition). Key features included the random assignment of participants to treatment and control groups to minimize selection bias and ensure group comparability, as well as the incorporation of pre-test and post-test measures to assess changes in the outcome variables.

The population for the study consisted of early-age school children (ages 3-5) attending a nursery school in Lagos State. A purposive sampling method was used to select a specific school based on accessibility and the willingness of parents and teachers to participate. From this school, a sample of 140 children was purposively selected, and participants were then randomly assigned to groups to ensure a representative sample. This approach provided a manageable sample size for a detailed examination of the research objectives. Data were collected using a questionnaire, an observation checklist developed following guidelines for classroom interaction research and semi-structured interviews with teachers and parents to gather insights on the children's learning experiences.

The final participant group consisted of 140 children aged 5-7; 58% were girls and 42% were boys, with 35% aged 7, 45% aged 6, and 20% aged 5. Two primary instruments were developed: an Environmental Awareness Questionnaire (EAQ) with 10 multiple-choice items covering topics like pollution, sustainability, and conservation, and a Vocabulary Acquisition Test (VAT) with 10 multiple-choice questions on environmentally-related terms. These were administered as a pre-test in a controlled setting to establish baseline levels. Following this, the treatment group underwent a 12-week intervention involving eco-storytelling, eco-songs, and eco-drama, all conducted during regular school hours with prior consent. After the intervention, the EAQ and VAT were re-administered as a post-test.

The reliability of the instruments was confirmed through a pilot test using Cronbach's Alpha, which yielded a coefficient of 0.78, indicating acceptable reliability. Data analysis involved descriptive statistics (frequency counts and percentages) to summarize the data, and a paired samples t-test was used to determine the statistical significance of the observed changes. All ethical considerations were adhered to, including obtaining informed consent from parents and guardians and ensuring the anonymity and confidentiality of all participants.

FINDINGS AND DISCUSSION

The results in Table 1 indicate a remarkable and uniform improvement in the children's acquisition of basic environmental vocabulary following the eco-linguistic activities. For every single term, the percentage of correct responses more than doubled from pre- to post-activity, with gains ranging from 39% to 51% (Table 1). The most substantial improvements were seen in the words 'reuse' and 'protect,' which saw a 51% increase, jumping from a baseline of 34% correct to an impressive 85% correct after the intervention. Similarly, understanding of 'flower' and 'Earth' improved by 48%, rising from 32% to 80% (Table 1). This consistent and dramatic surge in correct responses, accompanied by a corresponding sharp decline in wrong answers, demonstrates the powerful effectiveness of the activities in building foundational eco-linguistic knowledge (Table 1). Furthermore, the data highlights that the intervention was particularly successful in teaching actionable environmental concepts. Key terms central to sustainability practices 'recycle,' 'conserve,' 'reduce,' and 'reuse' all showed massive gains between 42% and 51% (Table 1). The post-activity scores for these critical terms ranged from 65% to 85%, indicating that a strong majority of children successfully understood and could define these concepts (Table 1).

Table 1. Basic Vocabulary Questions

Questions: What does each of the following means?	**Pre-Activity Score (%)**		**Post-Activity Score (%)**	
	Correct responses		Wrong responses	
	Before	After	Before	After
Flower - a colorful part of a plant	32%	80%	68%	20%
Tree - a tall plant with branches	28%	70%	72%	30%
Bird - a creature that flies	30 %	75%	70%	15%
Butterfly - a colorful flying creature	26%	65%	64%	35%
Earth - our planet	32%	80%	68%	20%
Recycle - to reuse something instead of throwing it away	28%	70%	72%	30%
Conserve - to use something carefully so it doesn't run out	30%	75%	70%	25%
Reduce - to use less of something	26%	65%	74%	35%

Reuse - to use something again instead of throwing it away	34%	85%	66%	15%
Protect - to keep something safe from harm	34%	85%	66%	15%

The data from Table 2 reveals a dramatic and consistent improvement in the children's environmental awareness following the eco-linguistics intervention. The post-activity scores show a profound increase across all questions, with gains ranging from 30% to 52.5%. The most significant leap was observed in the understanding of the importance of cleanliness, which surged from a pre-activity score of 25% to 62.5% post-activity a 37.5% difference. Similarly, awareness of the benefits of planting trees, which started at a baseline of 35%, reached 87.5% after the treatment, indicating that the vast majority of children successfully grasped this key concept. Furthermore, the results indicate that the activities were effective in fostering both practical and conceptual knowledge. For instance, the understanding of practical water conservation ("Turning off the tap saves water") improved from 29% to 72.5%. While the question on naming animals (forest & ocean) showed the smallest gain, it still doubled the children's performance, rising from 20% to 50%. Crucially, the question regarding the meaning of climate change, a more complex abstract concept, saw a massive 45% increase, from 30% to 75%, demonstrating that the intervention successfully translated challenging ecological ideas into age-appropriate learning.

Table 2. Effect of Eco-linguistics Activities on Environmental Awareness

Questions	**Correct Responses (n = 140)**		**Percentage (%)**	**Interpretation**
	Pre-Activity Score (%)	Post-Activity Score (%)		
We keep our environment clean?	25%		62.5%	Moderate awareness of cleanliness importance after treatment.
Turning off the tap saves water?	29 %		72.5%	Good understanding of water conservation treatment.

Planting trees gives oxygen?	35 %	87.5%	High awareness of trees' environmental benefits treatment.
Name animals (forest & ocean)?	20 %	50%	Half of the children could name animals correctly treatment.
Climate change means?	30 %	75%	Majority show eco-friendly attitudes towards littering treatment.

The results presented in Table 3 demonstrate a substantial positive impact across all measured areas of environmental knowledge following the intervention. As shown in Table 3, the post-activity scores show a significant increase from pre-activity baselines, with improvements ranging from 15% to 20%. Notably, the largest gains of 20% were observed in the understanding of recycling, knowledge of natural habitats, and awareness of pollution (Questions 1, 3, and 4) (Table 3). This uniform upward trend indicates that the eco-linguistic activities were highly effective in enhancing the children's foundational environmental literacy. Furthermore, the data confirms that the intervention was successful even for concepts where initial understanding was lowest or highest. For instance, awareness of pollution (Question 4) began with the lowest pre-activity score at 45% but saw a major 20-point increase to 65%. Conversely, knowledge of climate change (Question 5) started with the highest baseline of 70% and still showed a notable 15% improvement to 85% (Table 3).

Table 3. Effectiveness of Eco-linguistic activities on vocabulary acquisition

Questions	Pre-Activity Score (%)	Post-Activity Score (%)	Difference (%)	Interpretation
1	50%	70%	20%	Improved understanding of recycling.
2	62.5%	80%	17.5%	Better recognition of recyclable items.
3	55%	75%	20%	Improved knowledge of natural habitats.

4	45%	65%	20%	Awareness of pollution improved.
5	70%	85%	15%	Improved knowledge of climate change.

The t-test value as shown in the table below was carried out to find out the effect of eco-linguistic activities on vocabulary acquisition. Table 4 present the average score values gained from both pre-test and the post-test on Eco-linguistic activities. The analysis revealed a statistically significant improvement in test scores following the intervention. Participants mean score increased from 56.50 (SD =9.37) in the pre-test to 75.00 (SD = 7.45) in the post-test representing a substantial mean gain of 18.50 points (t(9) = -4.585, p = 0.001). The 95% confidence interval for this improvement ranged from 9.37 to 27.63 points, indicating that there is high level of confident the true effect of the intervention lies within this range (Table 4).

The large effect size (Cohen's d =1.45 calculated from the mean difference and polled standard deviation). This suggests this improvement is not only statistically significant but also practically meaningful. These results strongly support the effectiveness of the intervention in enhancing respondents' performance on the eco-vocabulary acquisition. The negative t-value simply reflects that the post-test was subtracted from pre-test and the significant result confirms the post-test scores were significantly higher (Table 4).

Table 4. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre test	56.50	10	9.369	2.963
	Post test	75.00	10	7.454	2.357

Table 5. Paired Samples Test

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 Pre test -- Post test	18.500	12.758	4.035	-27.627	-9.373	-4.585	9	.001

This was rejected due to the fact that the finding presented a positive and significant result on the eco-linguistic activities on environmental awareness, vocabulary acquisition and eco-friendly attitudes among the children. In supporting this finding, Tatin et al. (2024) represent critical discussion in environmental education represented in Indonesian EFL elementary school textbooks. The authors go deep into the analysis of some integrated eco-linguistic activities and give an idea of how those activities add to the input of children about the environment and their roles within that nature. Such a result will make ecological concepts integrated within language learning add not only comprehension capability with reference to environmental issues but further embed a sense of obligation in order to act. The above approach, as suggested, coincides with the idea of using eco-linguistic activity as a channel that may rise in environmental awareness by means of contextualized and relevant learning material.

In this line, Korenetskaya et al. (2020) also attempted to tackle the problem of including issues of sustainable development into university-level English classes to develop eco-linguistic competence. Although the above study targeted university students, it is relevant and hence appropriate for younger students too. Thus, discussing environmental issues within the context of language lessons allows students to get a proper understanding of interwoven human and ecological processes. Such awareness creates an appreciation of sustainable practices and develops eco-friendly attitudes, thus justifying the role of eco-linguistic activities in moulding environmentally conscious individuals.

Vocabulary acquisition is at the core of language learning as such, and eco-linguistic activities proved effective in enriching learners' vocabularies. As it was stressed by Tatin et al. (2024), the inclusion of environmental topics into the classroom setting significantly broadens learners' vocabulary concerning environmental questions. Children thus learn such words as "biodiversity," "sustainability," "conservation" in contexts, learn their meaning in wider discourses on the environment. This double advantage of linguistic and ecological education underlines the potential of eco-linguistic activities to induce transformation.

Prastio et al. (2023) have also elaborated on how eco-linguistic studies explain the interrelationship between language and ecological practices. Their analysis of the discourse of the Anak Dalam Jambi tribe showed that traditional ecological knowledge and practices are represented in their language. This linguistic representation not only preserves the culture but

also helps in transferring ecological wisdom to the younger generation. It would therefore make them learn the words for different ecological realities that surround them, enrich their vocabularies, and be culturally sensitive.

This is even evident in Korenetskaya et al. (2020), who present how in-country language classes of sustainable development enhance the students' technical vocabulary while fostering critical thinking. In this respect, learners are put into real texts and discussions related to environmental concerns, and with regard to that, exposure to specific terminology is something that will develop their linguistic competence in order to equip substantial conversations around sustainability. This can then be illustrated through how vocabulary acquisition and environmental education are integrated in an eco-linguistic activity. Some of the rather deeper levels at which eco-linguistic activities may make their effects manifest could be in inculcating eco-friendly attitudes among learners.

It is thus that exposure to environmental topics via the language lesson, for example, the teacher could motivate the learner toward sustainable behavior. Ebim's 2021 paper reflected on how the literary text contributes to building a worldview about the environment. Taking for example an ecocritical reading of Chinua Achebe's Things Fall Apart, it is quite obvious how literature can be used as a tool of ecology and at the same time be an instigator in the building of environmental empathy. While the study focuses on a literary text, the implications are clearly seen for classroom practices in the sense that inclusions of narratives of ecological interdependence will spur students to appreciate their natural environments and take better care of them. To this end, Prastio et al. (2023) went further to insist that eco-linguistic activities hold the potential to alter peoples' attitudes through cultural narratives. A similar result was shown in the research of the Anak Dalam Jambi tribe, where the language encodes and propagates pro-green behaviour, for example, forest protection. This kind of indigenous knowledge is encoded in language learning and inspires children to emulate such habits while developing a lifelong commitment toward nurturing natural resources. It provokes not only ecological attitude and cross-cultural understanding but a sense of world ecological citizenship too.

Findings of Korenetskaya et al. (2020) confirm that behavioural change is possible by means of eco-linguistic activities. Engaging in the problems of sustainable development, students develop consciousness regarding the implications of every action taken in everyday life, which converts into disposition to behave in a sustainable manner: reduce waste, save energy,

and speak up for nature protection. It is here that the study identifies supportive learning in the environment for internalization of eco-friendly values in students.

Such incorporation requires that integration into the educational process should be highly designed and implemented. According to Tatin et al. (2024), curriculum designers have to include systematically in the language learning material an environmental theme. In this respect, the linking of language objectives to those regarding environmental concern makes the learning holistic and relevant to the learner. This, in turn, will ensure that eco-linguistic activities are not considered peripheral but part of the very core educational framework. Realia and interactive techniques in implementing effective eco-linguistic activities are also supported by Korenetskaya et al. (2020). The real-world texts might serve a variety of teaching modes-from an individual work up to group projects with the multimedia means available in today's classrooms. This agrees with the latest methodologies in teaching that put much emphasis on active learning and student engagement. Prastio et al. (2023) and Ebim (2021) go further to support the relevance of the culture in eco-linguistic activities. It is by way of integrating local ecological knowledge and cultural narratives into practice that educators will be able to construct learning experiences truly in tune with students lived realities. This will also be helpful in enhancing the appropriateness and efficiency of eco-linguistic activities, apart from helping in the preservation of cultural aspects.

This, therefore, gives ample proof through research that eco-linguistic activities are effective in enhancing eco-friendly attitude, vocabulary acquisition, and raising environmental awareness in children. Finally, the research works of Tatin et al. (2024), Korenetskaya et al. (2020), Prastio et al. (2023), and Ebim (2021) underlined the transformative potential of integrating ecological themes into language instruction. This thereby brings out an integral approach toward education, bringing in the different spectrums of students' deeper perspectives, strengthening their linguistic ability, and enhancing their sustainability to face up to the constantly shifting global order. With sustainability now incorporated into the set of core values of various institutions worldwide, eco-linguistic activities have quite the role in shaping environmental minds that are linguistically appropriate. These are issues of implementation and using all the insights gained from continuous research that educators need to make the best use of eco-linguistic activities for the interest of a better future of life with sustainability for all.

CONCLUSION

Thus, the study has evidenced the transformational role of eco-linguistic activities in early childhood education. By structuring the activities that integrated environmental themes in the process of learning a second language, much help was given toward improving the vocabulary of the children and, what is of greater importance, their environmental awareness has been raised and thus positive environmental attitudes have been fostered. Such findings underpin the fact that contextual interactive modes are efficient in enabling young learners to develop linguistic and ecological competencies. Such a positive change in vocabulary development, in turn, and environmental responsibility will continuously vouch for newer learning methodologies to be devised as these can create changes across several domains at one instance.

Thus, the present study proposes the incorporation of eco-linguistic activities within early age curriculum so that pro-environmental attitudes may be inculcated within children from an early stage of development. Projects such as these are invaluable in the development of a more environmentally conscious and linguistically enabled future generation by instilling these children with the ability to discuss environmental concerns using relevant language and vocabulary.

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