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The Effectiveness of Eco Literacy-Based Instruction in Improving Vocabulary Acquisition Among Elementary School EFL Students

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ABSTRACT

In Indonesia, English is introduced as a local content subject in many elementary schools, with the aim of developing students' basic communicative competence. However, despite early exposure to the language, many Indonesian elementary school students continue to struggle with acquiring and retaining English vocabulary. This research analyzes the implementation of eco literacy-centered teaching on improving vocabulary learning for elementary students studying English as a Foreign Language (EFL). The study examines how contextual, theme-oriented learning connected to ecological subjects' aids vocabulary growth in young students. Employing a one group pre test post test design, a group of 28 elementary students were monitored during four meetings to measure between eco literacy-integrated English lessons and traditional vocabulary instruction from one intake group. Data were gathered via pre- and post-assessments, classroom observations, and student interviews. The findings indicate that eco literacy-focused instruction exhibited markedly greater advancements from roughly 2 (two) words during pre test, to 5 (five) out of 6 (six) words after the treatment using eco-literacy model in vocabulary understanding compared to the traditional treatment. Moreover, qualitative results indicate that incorporating ecological themes enhanced student involvement and enthusiasm in language acquisition. The research finds that instruction centered on eco literacy effectively promotes language abilities and environmental consciousness in elementary EFL education.

Keywords: Eco Literacy, Storytelling, English for Beginner, English Vocabulary

INTRODUCTION

The environment refers to everything that surrounds us. The environment holds significance for animals and humans on a daily basis. Everything that exists is part of the Universe. It encompasses everything and all occurrences. This refers to the existence of people and all the complexities of life. There is a strong bond between humanity and the universe. Both the Universe and mankind have both positive and negative aspects. It is time to explore the interconnectedness of humans and nature. Additionally, understanding "Eco Literacy" is essential in order to address the problems mentioned. How would you define eco literacy?

Eco literacy encompasses knowing how to responsibly preserve and maintain our natural surroundings. The word is derived from the Greek word "oikos," which translates to household. The universe, our world, home to creatures, and the natural setting. Literacy refers to the ability to read and write in the English language. Generally speaking, it involves having

knowledge about something. Eco literacy involves understanding and showing concern for the environment (Monaghan & Curthoys, 2018). Eco-Literacy aims to establish a community that cherishes the environment and endeavors to maintain its health for the future. Eco literacy requires a holistic grasp of environmental concepts, not just literacy in the traditional sense. It contains additional elements. Literacy involves reading, writing, and caring for others.

The four essential skills in Eco Literacy include the heads, the hands, the heart dan the spirit (Ha et al., 2022) or thinking, acting, showing concern, and establishing connections. The heads or thinking here mean being knowledgeable about various environmental issues and learning about ways to contribute to the environment such as reducing consumption, repurposing items, promoting recycling, and seeking eco-friendly alternatives to harmful products or simply as reduce, reuse, recycle and replace. The hands mean that people or students are trained to explore creative solutions to difficult problems. The heart involves understanding the influence of people's actions and technology on the environment. The spirit is essential to display warmth, empathy, and generosity towards people and animals. The clock hands can guide you in using environmentally-friendly tools and products. The prevailing notion is that there is a vital bond between humans and nature that cannot be broken.

According to research by Haggström (2020) that the setting for teaching holds significance and should be given more attention. Education involves various elements such as language, comprehension, literacy, and self-development, all of which are influenced by the environment in which they take place. The research revealed that students felt more independent and powerful after interacting with and visiting two outdoor locations. Because the teachers didn't enforce rigid guidelines and were innovative in their thinking, the students had great potential for learning in both teaching settings. These approaches enabled students to develop their own individual critical thinking skills (Kramsc & Steffensen, 2008).

We can start teaching kids about taking care of the environment as soon as they start school. They can learn about the environment in a fun way while they study different subjects (Anam et al., 2022). Moreover, understanding English is a crucial aspect of being literate and being knowledgeable about the environment. A broader vocabulary enables students to grasp the meanings of words more effectively, as suggested by (Ghani et al., 2022). There are numerous opportunities for students to learn from media. It is beneficial for improving their reading and writing proficiency. It can also assist them in gaining a deeper comprehension of environmental preservation. is significant as our existence hinges on the environment. Rapid population growth and the desire for improved living conditions drive people to heavily depend on natural resources (Allaby, 2007). This has negative impacts on the environment. Expanding their knowledge of the environment will enable the community to better tackle challenges It is crucial to find ways to address environmental issues in order to ensure sustainable living for the community. A certain group of people are knowledgeable and invested in preserving the environment. According to (Capra, 2020), they are considered eco-literate as a result of their keen awareness of environmental issues and being aware of the value of the environment. Ecological literacy involves showing concern for the environment, understanding it, and taking actions to support it. Eco-literacy is about more than just being educated about the environment, it also involves the capacity and eagerness to utilize that knowledge for sustainable living. In colleges, the Biology department focuses on the interdependent relationships between living organisms and their implications for the environment. The knowledge that students have acquired enables them to appreciate and protect the environment (Suryanda, et al., 2019). Ecological literacy involves being knowledgeable about the environment and taking steps to protect it (Nugroho et al., 2018).

We should strive to protect and nurture nature and the environment for their long-term sustainability. Its widespread use has detrimental impacts on the environment and poses threats to the survival of plants and animals (Suryanda et al., 2019). It is important to address

this environmental issue caused by human activity with seriousness. Ignoring the issue will result in a lack of food and potential conflict among people. People who have trouble with reading and writing may lack awareness of how their actions can damage the environment. They typically show little concern for nature and may even worsen its condition. It is important for us as young individuals to take on a significant responsibility in changing our perspective on the environmental crisis. This aims to educate and change the perspective of young individuals about the environment (Nugroho et al., 2018). We can choose to gain a better understanding of the environment.

Eco Literacy concept is being considered by researchers as a method to educate elementary school students on English words. This concept was inspired by prior studies and results. A study conducted by (Rantung et al., 2023) that using song lyrics to assist students in developing language skills and gaining insight into their surroundings. The results described that changing the wording of a song's lyrics can increase people's understanding of important issues. Bringing up *KePal-SPI*, *Navicula*, and *Burgerkil's* songs address the impact of pollution and natural disasters on the environment. Teaching kids about environmental stewardship should begin during their elementary school years. This is due to the rapid growth and learning of young children in their cognitive, emotional, and physical development (Wijaya et al., 2021). In line with the topic, another study was conducted also by (Anam et al., 2022). The goal of this study was to enhance the knowledge of teachers and students at "Ungaran Nature School (SAUNG)" in Semarang regarding the environment and conservation through the use of storytelling. The results revealed that ecological literacy must be fostered in both nature schools and public schools.

In Syah et al. (2021) with Adiwiyata program stated that there is a correlation between students' knowledge and their attitudes towards behavior both inside and outside of school. The Adiwiyata program has a significant impact on students' knowledge, emotions, and behavior in comparison to schools without the program. Students can enhance their knowledge of the environment through participation in the Adiwiyata Program. The sharing of eco-schools' activities in reports allows for cross-country evaluations of their progress. The data indicated the strengths and weaknesses of each school. This helped in strategizing for the future (Tönük & Kayihan, 2012), (Locke et al., 2013) in their investigation to advocate for the inclusion of environmental education in sustainable development education. A program called eco-literacy is being taught at both EARTH University in Costa Rica and in public schools located in rural communities. A research by (Maulidah et al., 2021) stated that the teacher organizes enjoyable activities to facilitate children's learning in a natural environment. They engage in playing games, discovering plants and animals, and contributing to environmental conservation through gardening and other activities in grade 5 elementary school in Ciamis. Another similar subject revealed from (Kadarisman & Pursitasari, 2023) that Children need to learn about the importance of caring for the environment early on. Based on (Desfandi et al., 2017), it is important for people to have a grasp of ecology and the functioning of the environment, and it is crucial to educate children about it from an early age.

In addition, research on college student was also conducted Yuniawan et al. (2022) that environmentally oriented universities, students employ digital tools for their environmental studies. This can help researchers understand how well students understand and care about the environment. Meanwhile (Hartono, 2020) observed to see if students at the Agriculture Faculty are learning about ecology in a sustainable way and look at how much they know about the environment. A research revealed that children, teachers and parents can enhance their problem-solving, creative thinking, communication, and emotional intelligence skills through creative play and nature-based learning activities (Prastiwi et al., 2020), (Nisa, 2020). The examination found that middle school students in Cirebon are being taught about the environment through social studies, with the help of teachers and parents, to increase their

awareness and understanding (Puspitasari, 2020). The students' comprehension of environmental issues was positively influenced by their school experience (Ninsiana et al., 2024).

Based on the previous studies mentioned above, in many EFL (English as a Foreign Language) elementary school classrooms, particularly in countries like Indonesia, vocabulary acquisition ability remains low. This problem manifests in several ways such as: poor vocabulary, limited vocabulary range, low motivation and engagement, lack of real-life application, insufficient exposure to English and one-size-fits-all teaching. Accordingly, the current study presents a solution with a model of teaching particularly English for Elementary students. The Eco Literacy model that addresses language acquisition by providing an engaging, meaningful, and interdisciplinary learning environment that helps students not only learn new words but understand, use, and retain them more effectively, while also becoming environmentally aware and socially responsible.

The study enables the author to elaborate more on how effective is eco literacy-based instruction model in improving the vocabulary acquisition ability of elementary school EFL students? This aims to analyze the effectiveness of the model in enhancing vocabulary acquisition among elementary school EFL students and compare vocabulary learning outcomes between students taught using eco literacy-based instruction as proposed model and those taught using conventional methods.

METHOD

The study utilized a quasi-experimental with one group pretest-post test design, comparing one group acted as experimental as well as control group. Simple action research was also applied. Data were obtained in four-meeting treatments. Design of the current research is displayed as follow:

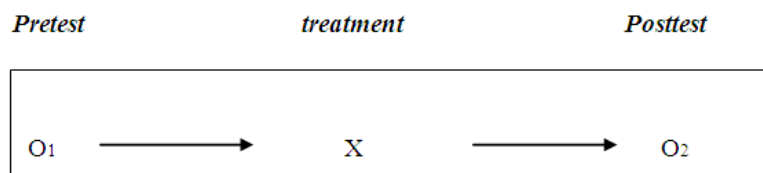


Figure 1. One Group Pre Test-Post Test Design

A group of 28 Elementary School students aged 6-8 years old from Komunitas Taman Baca Saroja in Warureja Tegal were involved as the subject in the research chosen by using stratified random sampling from a larger group and selected into smaller groups. The community was preferred as it has a mini library with hundred members representing different ages. Due to the diverse age groups within the community, the study then focused on instilling positive attitudes and character traits among the subject. The most important reason is that teaching beginners give more challenges. However, they are considered as good example for character building and ecological literacy practices.

The study aimed to investigate the influence of the Eco Literacy model, which employs storytelling and visual aids on the acquisition of English language skills, particularly the understanding of English vocabulary. To measure the vocabulary acquisition of the students, Eco Literacy model was given using English learning materials such as videos and posters with stories consisting 6 main words: verbs, adjectives, and nouns in English language. The activities or procedures were divided into two sections: practical tasks, utilizing flashcards and sticky notes, and experiential learning. (1) The *Hands-on* activity aids in our comprehension and retention of the story's words. The chosen words linked to the conservation of nature with the aim of ensuring their long-term understanding and preservation; (2) the use of *flashcards* with words (word cards), or write the words on sticky notes and stick them onto the images. Then

say the words together. Students were requested to recognize verbs from the story and then engage in the action practices representing the verbs. This was carried out to ensure that teaching with storytelling session can be applied in practical situations.

Table 1. List of Vocabulary

Nouns	Verbs	Adjectives
trash	plant	sad
bin	put	clean

The study obtained data from pre- and post-test session. The assessment at this stage was measured on how the students understand vocabulary using indicators from Thornbury in (Ha et al., 2022). The indicators describe how well they pronounce and spell the words, remember the meanings and enable to act out the given verbs or well known as vocabulary mastery. Each indicator has a score of 10-20 points on two ability scales. One scale is for not yet capable and the other is for capable. The total score ranges from 30-60 points. Levels of vocabulary mastery are shown in the table below:

Table 2. Score Intervals

51-60	4-5 correct words	Good to Excellent
41-50	3-4 correct words	Adequate
30-40	1-2 correct words	Low

Data were collected through a pre-test to measure students' initial vocabulary acquisition level using traditional vocabulary instruction. The subjects were then applied with the eco literacy-based vocabulary instruction over a four meetings period, then conduct a post-test after the intervention to measure changes in vocabulary acquisition among the students. To assess whether the dataset met the assumption of normal distribution, a Shapiro-Wilk test of normality was performed. This test was selected due to its appropriateness for small to moderate sample sizes, particularly relevant to the present study which involved 28 participants.

Data analysis was carried out in two stages: calculating the mean value and comparing the means and the normality test using paired sample t-test. In addition, an Excel software was utilized to test quantitative data. Data gained were then observed to initial hypothesis that the Null Hypothesis: There is no significant difference in vocabulary acquisition between pre-test and post-test scores ($\mu_{\text{post}} = \mu_{\text{pre}}$) of > 0.05 significant p-value, as well as Alternative Hypothesis (H_1): There is a significant difference in vocabulary acquisition between pre-test and post-test scores ($\mu_{\text{post}} \neq \mu_{\text{pre}}$) of > 0.05 significant p-value.

RESULTS AND DISCUSSION

Results

To determine whether the **difference scores** (post-test-pre-test) are normally distributed, a Shapiro-Wilk test was conducted. This test is appropriate for small samples ($n < 50$).

Table 3. Normality Test Result

Test	Statistic (W)	df	Sig. (p-value)	Interpretation
Shapiro wilk	0.973	28	0.615	Data is normally distributed

Vocabulary building in storytelling session was delivered in two meetings. Some pictures, flashcards and movie were given as teaching materials as the pre-test then continued as the post-test. The materials were chosen based on environmental issues performed in some cartoon characters, full color with some anecdotes and subtitles to ease the students with vocabularies and expand their abilities in a discussion at the end.

Results in two days storytelling or pre-test and post-test session are as follow:

Table 4. Pre test & Post test Results

N	Pre	Post	Difference
S1	2	6	4
S2	2	5	3
S3	3	5	2
S4	3	6	3
S5	2	6	4
S6	2	6	4
S7	3	5	2
S8	0	3	3
S9	1	4	3
S10	4	6	2
S11	2	6	4
S12	0	4	4
S13	3	5	2
S14	3	5	2
S15	0	3	3
S16	0	4	4
S17	2	6	4
S18	3	6	3
S19	2	5	3
S20	4	6	2
S21	3	6	3
S22	2	5	3
S23	2	6	4
S24	3	5	2
S25	2	5	3
S26	0	3	3
S27	2	5	3
S28	0	4	4
Average	2,0	5,04	3,07

Table 5. Paired t-test Output

	<i>Pre</i>	<i>Post</i>
Mean	2,0	5,0
Variance	1,5	1,0
Observations	28	28
Pearson Correlation	0,8	
Hypothesized Mean Difference	0	
df	27	
t Stat	-21,2	
P(T<=t) one-tail	0,01	
t Critical one-tail	1,71	
P(T<=t) two-tail	0,00	
t Critical two-tail	2,11	

Discussion

The result of the Shapiro-Wilk test in **Table 3** indicates W statistic of 0.973 with a significance value ($p = 0.615$). According to statistical criteria, if the p-value exceeds 0.05, the data are considered to be normally distributed, and the null hypothesis (H_0) that the sample comes from a normally distributed population is not rejected. Since the p-value in this case is well above the 0.05 threshold or the $p\text{-value} = 0.615 > 0.05$, it can be concluded that the dataset is normally distributed. This finding confirms that the assumption of normality has been met, the data is not significantly different from a normal distribution. Therefore, the assumption of normality is met, and a paired samples t-test can be used for the statistical hypothesis test.

Table 4 presents the individual scores of 28 students (S1 to S28) on a pre-test and post-test that were administered to evaluate the effectiveness of an eco-literacy-based instructional intervention on vocabulary acquisition. The pre-test was administered before the intervention to measure the students' initial vocabulary knowledge. The scores range from 0 to 4, with most students scoring between 0 and 3. The average pre-test score is 2.00, indicating that on average, students had limited vocabulary knowledge prior to the instructional treatment. This also means the words were unfamiliar among the students. Based on score intervals in Table 1, the students' knowledge of English vocabulary is marked as LOW or categorized as not yet capable.

The post-test was conducted after the instructional intervention to assess vocabulary acquisition progress. Scores in the post-test range from 3 to 6, with many students achieving scores of 5 or 6. The average post-test score is 5.04, which reflects a substantial improvement in vocabulary performance. The difference column represents the gain scores (Post-test & Pre-test), showing the improvement for each student. The individual gains range from 2 to 4 points, with no student showing a decrease or no improvement. The average gain score is 3.07, meaning that students improved by about 3 points on average as a result of the intervention.

To determine whether the eco-literacy-based instructional model significantly influenced students' vocabulary acquisition, a paired sample t-test was conducted comparing pre-test and post-test scores from 28 elementary EFL students. Results of the analysis in **Table 5** revealed a substantial improvement, with the mean pre-test score at 2.00 and the mean post-test score at 5.04, resulting in an average gain of 3.07 points. Every student demonstrated improvement, and no score declined or remained the same. This consistent upward trend indicates a strong learning effect attributable to the intervention. In other words, the value of $P(T \leq t)$ two-tail reaches 0,00 or < 0.05 . The results are categorized as GOOD. Thus, the participants are **capable** in understanding, pronounce, spell and write 5 words accurately.

Therefore, it can be concluded that the eco-literacy-based instruction had a meaningful and reliable impact on improving vocabulary acquisition among elementary EFL learners.

These findings are in line with those of (Kazazoglu, 2025), who found that the integration of eco-literacy themes into English instruction not only enhanced vocabulary mastery but also fostered environmental awareness among primary school students. Similarly, (Ali et al., 2024) reported that contextual English learning with environmental content increased both students' engagement and their retention of new vocabulary. The results of the current study affirm and extend these previous findings by offering quantitative evidence of vocabulary gains, suggesting that eco-literacy-based instruction can serve as a dual-purpose approach, enriching both language proficiency and ecological consciousness in the classroom.

Using colorful and lively animation pictures from the story, the four session treatments led the vocabulary development. Presenting environmental picture cards with deep story of Love the Nature shown by the character, most of the students show positive attitude during the session. This shows that the students familiar with the words given or they can read, pronounce, spell and remember the meaning correctly. In other words, the eco literacy-based instruction has significant improvement in the vocabulary acquisition ability of elementary school EFL students. The evidence goes with the one conducted by (Rantung et al., 2023).

CONCLUSION

The findings illustrate that implementing the eco literacy-based instruction for language acquisition among elementary school EFL students resulted in a significant increase (over 60%) in the amount of new vocabulary acquired by the students. Before the treatment, the students gained less than 3 correct vocabularies. Unlike the pre-test, enhancement are clearly observed after the treatment using eco literacy-based instruction with the average score of correct pronunciation, spelling and meaning from all the participants reached 5 correct words. This means the objective of the current research has significantly achieved. On the other hand, this model offers different experience in English teaching and learning among teachers especially fun and purposeful, and more engagement among the students. Another reason is that the teaching values from the story inspires students and increases their enthusiasm for learning foreign languages, particularly English. In addition, this way of learning makes process of learning more enjoyable and relax.

In the future, the study has significant opportunities to explore the topic and has the potential to include more subjects or stories and meetings. To boost the students' language level, the model will be considered as good choice to keep leaning vocabulary simple, visual, and repetitive. The teachers also are able to apply total Physical Response (TPR) and gestures for better understanding. This approach can be adopted by other researchers to conduct real experiments comparing various subjects, including high school students participation.

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