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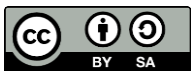

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Literacy Activities in the Go Green Program to Increase Environmental Awareness among Elementary School Students

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Abstract

This study aims to analyze the effectiveness of literacy activities in the Go Green program in improving elementary school students' environmental awareness, which includes cognitive, affective, and conative dimensions. The research subjects were 40 fifth-grade students (class V.B) at SDN 1 Arjawinangun. The program was implemented from February to June 2025 with literacy activities focusing on greening, waste management, reduction of single-use plastics, and energy and water conservation. The study employed a one-group pretest–posttest design using questionnaires before and after the program, accompanied by observations to capture students' behavior during the activities. The results of the paired sample t-test indicated a significant increase in students' environmental awareness, with posttest scores on average 9.75 points higher than pretest scores ($t = -18.004$; $p < 0.001$). Simple regression analysis revealed that literacy activities in the Go Green program had a positive and significant effect on improving overall environmental awareness. Meanwhile, multiple regression analysis showed that the four literacy activities contributed differently to students' cognitive, affective, and conative dimensions. These findings demonstrate a strong effect size. However, this study is limited by the use of a one-group design, reliance on self-reported measures, and restricted generalization since it involved only one class from a single school.

Keywords: *Go Green program; environmental awareness; environmental education elementary education.*

Introduction

Environmental issues have become a global concern due to their severe impact on human sustainability. The rise of plastic waste, declining air quality, and shrinking green spaces require early behavioral changes through education. Based on environmental education theory and behavior change models, elementary schools hold a strategic role in shaping pro-environmental values, as students are at a critical stage of character formation.

Despite this, many schools, including SDN 1 Arjawinangun, still struggle with daily littering, high dependence on single-use plastics, and low student involvement in greening activities. This highlights a gap between the goals of environmental education and its implementation in practice. While previous studies (Safitri, Habibi, & Matlubah, 2023; Putri, Christiani, Sari, & Pramuja, 2024) confirmed the effectiveness of experiential and collaborative learning in improving awareness, they often lack a focus on the comprehensive dimensions of awareness (cognitive, affective, and conative) as emphasized by Nugroho (2022). Thus, there is still limited research addressing how integrated school programs can simultaneously strengthen knowledge, attitudes, and actions.

This study addresses that gap by applying the Go Green program at SDN 1 Arjawinangun, which includes greening, waste management, and reducing single-use plastics, with students positioned as active agents of change. Specifically, the research asks: Does the Go Green program significantly improve students' environmental awareness, and how does it affect the cognitive, affective, and conative dimensions?

In this study, environmental awareness is defined as students' understanding (cognitive), concern and values (affective), and sustainable actions (conative) toward the environment. The Go Green program refers to literacy-based activities designed to promote sustainable behavior through experiential learning. The findings are expected to contribute theoretically to environmental education research and practically to the design of school-based sustainability programs.

Method

This research employed a quantitative approach with a one-group pretest–posttest design, conducted at SDN 1 Arjawinangun from February to June 2025. This design was selected because it enables the measurement of changes before and after the intervention within the same group, making it suitable for evaluating the impact of the program (Sugiyono, 2017).

The population consisted of all students at SDN 1 Arjawinangun, while the sample was 40 fifth-grade students (Class V.B) selected through purposive sampling. According to Indrawan and Yaniawati (2017), purposive sampling is determined based on specific considerations aligned with research objectives. Grade V.B was chosen because students in this class demonstrated adequate readiness, participation, and critical thinking skills to support the research process.

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The intervention involved Go Green literacy activities, namely: (1) greening literacy, (2) waste management literacy, (3) single-use plastic reduction literacy, and (4) energy and water conservation literacy, as shown in the following blueprint table.

Table 1. Observation Blueprint Table

No	Indicator	Statement
1	Greening literacy	Students are actively involved in planting activities within the school area.
		Students take care of plants by watering or removing weeds regularly.
		Students maintain the cleanliness of green areas and do not damage plants.
2	Waste Management Literacy	Students dispose of waste in the appropriate bins (organic or inorganic).
		Students actively participate in waste sorting or recycling activities.
		Students do not litter in the school environment.
3	single-use plastic reduction Literacy	Students bring their own drinking bottles and lunch boxes from home.
		Students avoid using single-use plastics such as straws or plastic bags.
		Students set an example for peers by using eco-friendly equipment.
4	Energy and Water Conservation Literacy	Students turn off lights or fans when not in use.
		Students close water taps after use.
		Students reuse water (e.g., ablution water) for watering plants.

Activities were implemented for four months with weekly sessions. A pretest and posttest questionnaire consisting of 18 validated and reliable items measured students' environmental awareness across cognitive, affective, and conative dimensions. The following table presents the blueprint of the environmental awareness questionnaire.

Table 2. Blueprint of Environmental Awareness Questionnaire

No	Dimension	Indicator
1	Cognitive	Knowing the importance of protecting the environment
		Understanding the content of the Go Green program

		Knowing environmental issues such as clean water and air
2	Affective	Feeling comfortable and happy with a clean and green environment
		Having a sense of responsibility toward the environment
		Feeling proud and engaged in environmental activities
3	Conative	Behaving to maintain environmental cleanliness
		Taking actions to save water and energy
		Participating in environmental care activities or campaigns

Data were analyzed using paired sample t-tests to compare pretest and posttest scores, simple regression to examine the effect of each literacy activity, and multiple regression to determine the simultaneous contribution of the four activities. Ethical considerations were addressed through informed consent from parents, approval from the school, and ensuring the confidentiality of student data.

Results

The results of the normality tests for the pretest, posttest and observation are as follows.

Table 3. Normality Tests for Pretest, Posttest, and Observation

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest	0.960	40	0.171
Posttest	0.962	40	0.191
Observation	0.967	40	0.283

Since the sample size of 40 is less than 50, the significance values from the Shapiro-Wilk test are 0.171 for the pretest, 0.191 for the posttest, dan 0.283 for Observation. All of which are greater than 0.05. Therefore, the pretest, posttest, and observation scores are normally distributed. Since the pretest and posttest results were normally distributed, the analysis could proceed with the paired sample t-test. The paired sample t-test showed a mean difference of -9.750 with a standard deviation of 3.425 and a significance value (2-tailed) of 0.000 ($p < 0.05$), indicating a highly significant statistical difference between the pretest and posttest scores.

To meet the assumptions of regression analysis, classical assumption tests were conducted on the observation and posttest data. The first requirement, the normality test, confirmed that both posttest and observation data were normally

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distributed. The next requirement, the multicollinearity test, ensured that the observation and posttest results were not highly correlated. The final requirement, the heteroskedasticity test, was conducted to examine whether the residuals in the regression model had constant variance.

For easier regression analysis, the independent variable (X) represents the Go Green program, consisting of four components: X1 (greening), X2 (waste management), X3 (reduction of single-use plastics), and X4 (energy and water conservation). The dependent variable (Y) represents students' environmental awareness, measured through three main dimensions: Y1 (cognitive), Y2 (affective), and Y3 (conative). The following section presents the results of the multicollinearity test for the variables used in this study.

Table 4. Multicollinearity Tests

Model		Collinearity Statistics	
		Tolerance	VIF
1	X1	0.872	1.147
	X2	0.971	1.030
	X3	0.821	1.218
	X4	0.845	1.183

a. Dependent Variable: Y

Since all independent variables have VIF values below 10 and Tolerance values above 0.1, it can be concluded that there is no multicollinearity in the regression model. To ensure the regression model meets the assumption of homoscedasticity, the heteroskedasticity test was conducted, as shown in the following table.

Table 5. heteroskedasticity Tests

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.0245	5.306		-0.046	0.963
	X1	0.166	0.299	0.099	0.554	0.583
	X2	0.099	0.233	0.072	0.427	0.672
	X3	-0.256	0.270	-0.173	-0.946	0.351
	X4	0.135	0.229	0.107	0.590	0.559

a. Dependent Variable: Abs_RES

Based on the heteroskedasticity test using the Glejser method, the significance values (Sig.) for all independent variables (X1, X2, X3, and X4) were found to be greater than 0.05. This indicates that there is no heteroskedasticity in

the regression model, meaning the error variance is constant (homoscedastic), and the regression model meets the classical assumptions. Since there are no issues with the regression assumptions, the regression analysis can be performed, and the results are presented in the following table.

Table 6. Simple Linear Regression Test

Dependent Variable	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Y	1	(Constant)	2.881	6.490		0.444	0.660
		X	1.262	0.136	0.834	9.306	<0,001
Y1	1	(Constant)	-3.207	3.106		-1.032	0.308
		X	0.510	0.065	0.787	7.860	<0,001
Y2	1	(Constant)	5.442	3.313		1.643	0.109
		X	0.326	0.069	0.607	4.710	<0,001
Y3	1	(Constant)	0.646	3.945		0.164	0.871
		X	0.426	0.082	0.642	5.166	<0,001

The regression test results indicate that the Go Green Program (X) has a positive and significant effect on students' environmental awareness (Y) overall. This is evident from the regression coefficient of 1.262, a Beta value of 0.834, t-value of 9.306, and significance $p < 0.001$, meaning that each improvement in the implementation of the Go Green Program increases students' environmental awareness with a very strong effect. A closer look at each dimension shows that the cognitive dimension (Y1) receives the greatest influence with a coefficient of 0.510 and Beta 0.787 ($t = 7.860$; $p < 0.001$), indicating that the program is highly effective in enhancing students' knowledge and understanding of environmental issues. The conative dimension (Y3) shows a coefficient of 0.426 with Beta 0.642 ($t = 5.166$; $p < 0.001$), suggesting the program also encourages students to take real actions and adopt pro-environmental behaviors. Meanwhile, the affective dimension (Y2), though significant, has a lower coefficient of 0.326 with Beta 0.607 ($t = 4.710$; $p < 0.001$), demonstrating that the program contributes to improving students' attitudes, concern, and care for the environment, albeit not as strongly as in the cognitive and conative dimensions. To further examine the effect of the Go Green Program on each dimension of environmental awareness, a multiple regression analysis was conducted.

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Table 6. Multiple Linear Regression Test

Dependent Variable	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Y	1	(Constant)	-12.708	9.230		-1.377	0.177
		X1	2.051	0.521	0.409	3.940	<0.001
		X2	1.326	0.405	0.322	3.276	0.002
		X3	1.663	0.470	0.378	3.535	0.001
		X4	0.809	0.399	0.214	2.028	0.050
Y1	1	(Constant)	-3.505	5.167		-0.678	0.502
		X1	1.237	0.291	0.563	4.244	<0.001
		X2	0.172	0.226	0.096	0.761	0.452
		X3	0.190	0.263	0.098	0.720	0.476
		X4	0.284	0.223	0.171	1.271	0.212
Y2	1	(Constant)	0.983	3.927		0.250	0.804
		X1	0.133	0.222	0.075	0.599	0.553
		X2	0.396	0.172	0.272	2.303	0.027
		X3	0.932	0.200	0.597	4.654	<0.001
		X4	0.087	0.170	0.065	0.513	0.611
Y3	1	(Constant)	-3.505	5.167		-0.678	0.502
		X1	1.237	0.291	0.563	4.244	<0.001
		X2	0.172	0.226	0.096	0.761	0.452
		X3	0.190	0.263	0.098	0.720	0.476
		X4	0.284	0.223	0.171	1.271	0.212

Based on the results of the multiple regression analysis, it was found that the four aspects of the Go Green Program had varying effects on students' environmental awareness. Overall (Y), all independent variables had a significant influence, with X1 (greening) contributing the most (B = 2.051; Beta = 0.409; t = 3.940; p < 0.001), followed by X3 (single-use plastic reduction) (B = 1.663; Beta = 0.378; t = 3.535; p = 0.001), X2 (waste management) (B = 1.326; Beta = 0.322; t = 3.276; p = 0.002), and X4 (energy and water conservation), which had the lowest but still significant contribution (B = 0.809; Beta = 0.214; t = 2.028; p = 0.050). This indicates that greening and plastic reduction are dominant factors in enhancing overall environmental awareness.

In the cognitive dimension (Y1), only X1 (greening) had a significant effect (B = 1.237; Beta = 0.563; t = 4.244; p < 0.001), while X2, X3, and X4 were not significant, showing that students' understanding of environmental issues is more influenced by direct involvement in greening activities. In the affective dimension (Y2), the significant variables were X2 (waste management) (B = 0.396; Beta =

0.272; t = 2.303; p = 0.027) and X3 (single-use plastic reduction) (B = 0.932; Beta = 0.597; t = 4.654; p < 0.001), whereas X1 and X4 were not significant. This suggests that students' emotional and social experiences are more shaped by waste management and plastic reduction activities. Meanwhile, in the conative dimension (Y3), only X1 (greening) was significant (B = 1.237; Beta = 0.563; t = 4.244; p < 0.001), while X2, X3, and X4 had no significant effect on students' actual behavior. Thus, greening activities are key in promoting pro-environmental behavior.

Overall, these results indicate that the Go Green Program effectively increases students' environmental awareness, but the influence of each program aspect varies depending on the dimension measured: greening dominates cognitive and conative dimensions, while waste management and plastic reduction have a greater impact on the affective dimension.

This study shows that the Go Green Program significantly enhances environmental awareness among SDN 1 Arjawinangun students. The program improves all three dimensions of environmental awareness: cognitive, affective, and conative. The cognitive dimension reflects students' improved understanding of environmental issues, such as the importance of greening, waste management, and plastic reduction. The affective dimension demonstrates increased concern and positive attitudes toward the environment, while the conative dimension is reflected in students' concrete actions, such as planting trees, sorting waste, and conserving resources. These findings align with theories stating that environmental awareness encompasses knowledge, attitudes, and behaviors, and that direct experiences in learning can sustainably shape all three aspects (Nugroho, 2022; Safitri, Habibi, & Matlubah, 2023; Putri, Christiani, Sari, & Pramuja, 2024).

Furthermore, the effects of the Go Green Program differ across the dimensions of environmental awareness. The cognitive dimension is influenced by all program components, demonstrating high effectiveness in enhancing students' environmental knowledge, consistent with Bloom's perspective and previous studies (Chotimah et al., 2022; Pradana & Rahmawati, 2021; Putri, Christiani, Sari, & Pramuja, 2024). In the affective dimension, significant effects come only from certain activities, indicating that direct experiences and reflections involving emotions and social values are more decisive in increasing students' concern (Nugroho, 2022; Safitri, Habibi, & Matlubah, 2023; Putri, Christiani, Sari, & Pramuja, 2024). Meanwhile, the conative dimension is primarily influenced by participatory activities like tree planting, aligning with findings that emphasize the importance of practical interventions to foster sustainable behavior (Safitri, Habibi, & Matlubah, 2023; Maghfiroh & Harmanto, 2025; Widiawati, Barkah, & DS, 2022)]. In conclusion, the Go Green Program has the strongest impact on the cognitive aspect, followed by affective and conative dimensions, suggesting that future program improvements should emphasize activities that promote students'

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actual actions so that environmental awareness is reflected not only in knowledge and attitudes but also in everyday behavior.

Conclusion

The literacy activities in the Go Green Program have proven effective in enhancing elementary school students' overall environmental awareness, encompassing knowledge, attitudes, and actions. Through various literacy-based activities—such as greening, waste management, reducing single-use plastics, and conserving energy and water—students not only gain a better understanding of the importance of environmental conservation but are also encouraged to develop care and take concrete actions supporting sustainability. The program's impact varies across dimensions: knowledge is strengthened through informational and reflective literacy, attitudes are shaped more by consistent practices such as waste management and reducing plastic use, while tangible actions are mainly stimulated by direct involvement in greening and conservation activities.

Looking ahead, to maximize effectiveness, literacy strategies should be designed to balance and reinforce all three dimensions of environmental awareness. For instance, cognitive literacy activities could be integrated with reflective exercises to deepen students' attitudes, while physical literacy practices like greening could be expanded into ongoing sustainable projects involving regular student participation. Furthermore, collaboration with parents and the local community can strengthen literacy-based habits outside school, ensuring that the program's impact extends beyond the classroom into students' daily lives.

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