

Original Article

Relationship Between Environmental Education Exposure and Environmental Orientation of Grade 6 Learners: Basis for a Proposed School-Based Environmental Literacy Program

Mary Joy L. Alonzo, Jean S. Omo, Meliza P. Alo 

Author Information:

College of Graduate and Professional Education, Davao del Sur State College, Digos City, Davao del Sur, Philippines

Correspondence:

maryjoyalonzo@gmail.com

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Abstract. Amid the growing emphasis on environmental education, fostering learners' awareness, attitudes, and responsible behaviors toward the environment has become a key goal in basic education. This study examined the relationship between exposure to environmental education and the environmental orientation of Grade 6 learners. Specifically, it assessed learners' exposure to environmental education and explored its association with their environmental orientation. A quantitative descriptive-correlational research design was employed, using validated questionnaires to gather data on both variables. The findings indicated that learners exhibited a very high level of exposure to environmental education and a high level of environmental orientation. Moreover, a positive relationship was observed between exposure to environmental education and environmental orientation. Based on these results, the study proposed "Project ECO-Learn: Enhanced Environmental Awareness and Action Program for Grade 6 Learners" as an enrichment initiative to sustain and strengthen learners' environmental knowledge, attitudes, and practices through structured instruction, experiential activities, reflective exercises, and community involvement. The study, however, was limited to a single school and relied on self-reported data, which may affect the generalizability of the findings. Future research could involve multiple schools and diverse educational contexts to validate further the long-term impact of environmental education on learners' environmental orientation.

Keywords: *Environmental orientation; Environmental education exposure; Experiential learning; Elementary learners; Pro- environmental behavior.*

Environmental issues such as climate change, biodiversity loss, pollution, and unsustainable resource use continued to pose serious threats to ecosystems and human societies. These challenges affected community well-being, economic stability, and long-term sustainability. In response, environmental education became a vital component of formal schooling, helping learners develop an informed perspective on environmental issues and promoting responsible decision-making. At the global level, research indicated that environmental education contributed to the development of learners' environmental orientation. A systematic review by Ardoin et al. (2020) found that structured, inquiry-based, and participatory environmental education programs led to meaningful improvements in learners' environmental understanding and competencies. Similarly, Mashaba et al. (2022)

reported that primary school learners in South Africa demonstrated significant gains after participating in structured environmental learning initiatives, highlighting the value of curriculum-based approaches. In Korea, Keum and Baek (2025) showed that a STEAM-integrated climate change education program enhanced elementary learners' environmental competence, suggesting that interdisciplinary approaches strengthened overall environmental orientation. In China, Zhao et al. (2024) found that nature-based environmental education programs positively influenced learners' environmental understanding and encouraged responsible environmental actions.

In the Philippine context, several studies supported the role of environmental education in shaping learners' environmental orientation. Conel and Avilla (2022) found that experiential and reflective instruction improved students' understanding of ecological systems compared to traditional methods. Punzalan (2020) reported that learners who participated in environmental programs demonstrated improved awareness and engagement in sustainable practices. Additionally, Cruz-Ocampo (2025) highlighted that integrated environmental learning approaches in classrooms contributed to a deeper understanding of environmental issues and sustainability concepts. The same study also identified a clear research gap, emphasizing the need for a more detailed, evidence-based investigation of how exposure to environmental education predicted learners' environmental orientation, thereby strengthening the rationale for the proposed program.

Despite these findings, many local studies focused primarily on awareness and attitudes, with limited attention given to environmental orientation as a broader construct among elementary learners. In the Davao Region, existing studies largely focused on instructional practices rather than learner outcomes. Agcang et al. (2026) found that teachers with high environmental literacy were more likely to implement effective environmental education practices, suggesting that improved instructional exposure might influence learner outcomes but required further empirical examination. Addressing this gap was important, as strengthening learners' environmental orientation supported informed decision-making and aligned with global sustainability goals, particularly Sustainable Development Goal 4 (Quality Education) and Sustainable Development Goal 13 (Climate Action). Examining the relationship between exposure to environmental education and environmental orientation yielded valuable insights for designing effective school-based interventions.

This study was grounded in Constructivist Learning Theory, which posited that learners actively construct understanding through engagement, reflection, and interaction with their environment (Schunk, 2020). Learning approaches such as inquiry-based activities, experiential learning, and real-world environmental tasks enabled learners to connect new concepts with prior experiences, thereby strengthening their environmental orientation.

Specifically, the study aimed to: (1) determine the level of environmental education exposure among Grade 6 learners; (2) assess the level of environmental orientation of the learners; (3) determine the relationship between environmental education exposure and environmental orientation; and (4) propose a school-based environmental literacy program based on the study's findings.

Methodology

Research Design

To achieve the objectives of this study, a descriptive-correlational research design was employed. This quantitative approach enabled researchers to describe population characteristics and examine statistical relationships between variables without manipulating them (Creswell & Creswell, 2017; Fraenkel & Wallen, 1990). It was particularly appropriate in educational research when the purpose was to determine the extent to which variables were associated, specifically the relationship between environmental education exposure and the environmental orientation of Grade 6 learners. Descriptive-correlational designs provided a systematic means of collecting, organizing, and analyzing data to determine the strength and direction of relationships among variables (Best & Kahn, 2021).

Using this design enabled the study to assess levels of environmental education exposure and learners' environmental orientation, and to examine how variations in exposure were statistically associated with differences in environmental orientation. It is important to note that this approach identified patterns of relationship but did not establish causal effects. This design was well-suited for educational settings where experimental manipulation might not have been feasible or appropriate, allowing researchers to generate evidence that could inform instructional practices and support the development of a school-based environmental literacy

program (Best & Kahn, 2021).

Participants and Sampling Technique

The study was conducted among Grade 6 learners in one of the public elementary schools in Bansalan, Davao del Sur, which had a total enrollment of 265 students for the school year 2025–2026. To ensure that the participants adequately represented the population, the researchers used simple random sampling (SRS) as the sampling technique. Simple random sampling was a probability-based method in which every member of the population had an equal chance of being selected, reducing potential bias and ensuring the representativeness of the sample (Creswell & Creswell, 2017; Best et al., 2021). Using the Raosoft sample size calculator, the researchers determined that at least 158 students were required to achieve 95% confidence with a 5% margin of error. The respondents were then randomly selected from the Grade 6 population to participate in the study. This approach ensured that the data collected were representative of the entire Grade 6 population in the school.

Grade 6 learners were specifically chosen as respondents because they were in the final stage of elementary education, making them more likely to have been exposed to the school's environmental education curriculum. Their age and cognitive maturity allowed them to comprehend environmental concepts, reflect on environmental issues, and respond reliably to assessment instruments, making them ideal participants for evaluating the influence of environmental education on environmental knowledge (Fraenkel & Wallen, 1990; Creswell & Creswell, 2017).

Research Instrument

The study utilized both a self-made and a standardized adapted instrument to ensure that the data collected were valid and appropriate for Grade 6 learners. To measure the level of environmental education exposure, the researchers developed a self-made questionnaire, which was validated by three experts: a Master Teacher, a School Principal, and an Environmental Advocate. These validators were selected based on their expertise in quantitative research and their strong background in environmental education and advocacy, ensuring both methodological soundness and content relevance of the instrument. Following the validation process, pilot testing was conducted to assess the instrument's reliability, yielding a Cronbach's alpha of 0.83, indicating good internal consistency.

To assess the environmental orientation of Grade 6 learners, the study adapted a standardized instrument from Artvinli and Demir (2018), titled "A Study of Developing an Environmental Attitude Scale for Primary School Students." The scale was modified to align with the objectives of this study while maintaining its core constructs. Content validation was conducted through consultation with subject-matter experts, and a pilot test was administered to a small sample of Grade 6 learners to confirm clarity, relevance, and comprehension. Reliability analysis of the adapted instrument yielded a Cronbach's alpha of 0.82, indicating strong internal consistency. In general, these procedures, including standardization, adaptation, content validation, pilot testing, and reliability assessment, ensured that both instruments were valid and reliable in measuring environmental education exposure and environmental orientation. This strengthens the study's accuracy, credibility, and overall rigor.

Data Gathering Procedure

Prior to conducting the study, the researchers held a conference with the classroom adviser to discuss the study plan and ensure smooth implementation of the data collection process. Permission was then sought from the learners' parents to obtain their consent, as well as from the school head to conduct the research formally within the school. After all necessary approvals were secured, the study's objectives and purpose were thoroughly explained to the respondents. The learners were informed of their rights as respondents, including the option to participate voluntarily, to withdraw at any time, and to have their responses kept confidential. Following the orientation, the survey instruments were distributed, and the students were given approximately one hour to complete them. Upon completion, the researchers collected the questionnaires, organized and tallied the responses, and encoded the data into Microsoft Excel. Statistical analysis was then performed using JASP, an open-source software platform. This systematic approach ensured accuracy, consistency, and reliability in the handling and analysis of the collected data.

Data Analysis

The data gathered from Grade 6 learners were analyzed using both descriptive and inferential statistical techniques. The following statistical methods were applied in this study: (a) Mean and Standard Deviation were

used to assess learners' level of exposure to environmental education and to evaluate their environmental orientation, (b) Shapiro–Wilk Test was employed to examine the normality of the data distribution, ensuring the appropriateness of using parametric tests, (c) Pearson’s Correlation Coefficient was used to investigate the relationship between exposure to environmental education and learners’ environmental knowledge at the 0.05 significance level.

Ethical Considerations

This study was conducted in full compliance with ethical standards to ensure the protection, rights, and welfare of all participants, particularly because the research involved Grade 6 learners. Every step of the research process was carefully designed to respect students' dignity and safety. Before initiating data collection, consent forms were sent to the parents or guardians of the selected participants. These forms clearly outlined the study’s goals, procedures, potential risks, and expected benefits. Parents or guardians were informed that their child’s participation was entirely voluntary and that they could withdraw consent at any time without any negative consequences. In addition to parental approval, students were provided with age-appropriate assent forms. These forms explained the purpose of the study, the steps involved, and the students’ right to decline participation or stop at any point. Researchers also conducted an orientation session with the learners to explain the study in simple, understandable language. This helped students make informed decisions about their involvement and ensured that participation was genuinely voluntary. All procedures, including completing questionnaires and collecting engagement data, were designed to be safe, non-intrusive, and free from any physical, emotional, or psychological harm. To maintain privacy, all information collected from students was kept strictly confidential. Records were stored securely and could only be accessed by the research team, preventing unauthorized access or misuse. Students’ personal information was removed from all datasets, and responses were coded to ensure that individual identities could not be traced. This approach allowed the study to report overall findings without linking data to specific participants, protecting learners’ anonymity.

Results and Discussion

Test for Normality

The results of the Shapiro–Wilk test indicate that Environmental Education Exposure has a test statistic of 0.971 with a p-value of 0.074. Since the p-value is greater than the conventional alpha level of 0.05, the null hypothesis of normality is not rejected. This suggests that the data for Environmental Education Exposure are approximately normally distributed. Therefore, parametric statistical analyses that assume normality are appropriate for this variable. Similarly, Environmental Orientation yielded a Shapiro–Wilk statistic of 0.858 with a p-value of 0.086. Despite the lower test statistic, the p-value remains above 0.05, indicating that the distribution does not significantly deviate from normality. Thus, Environmental Orientation can also be considered normally distributed. This supports the use of parametric tests for further analysis involving this variable.

Table 1. *Test for normality*

Variables	Shapiro-Wilk	P-value of Shapiro-Wilk	Remark
Environmental Education Exposure	0.971	0.074	Normally Distributed
Environmental Orientation	0.858	0.086	

Level Environmental Education Exposure

Table 2 presents the overall mean analysis of environmental education exposure levels among Grade 6 learners. The results show a grand mean of 4.33 (SD = 0.18), which is interpreted as very high. This indicates that learners demonstrate very frequent and extensive exposure to environmental education through classroom instruction, school-based activities, and related learning experiences. The relatively low standard deviation suggests that responses are consistent, reflecting a common perception among learners regarding their strong exposure to environmental concepts and practices.

The result is consistent with Zsóka et al. (2012), who reported a strong correlation between the intensity of environmental education and students’ environmental knowledge, indicating that learners who received more comprehensive instruction demonstrated higher awareness and understanding of environmental issues. Similarly, Nurkhin et al. (2025) found that students’ environmental attitudes had a significant positive effect on their environmentally responsible behavior, suggesting that learners with stronger pro-environmental attitudes are more likely to engage in recycling, conservation, and other sustainable practices.

Table 2. *Level of environmental education exposure*

Indicators	Mean	SD	Interpretation
1. I have learned about environmental issues in school.	4.38	0.82	Very High
2. My teachers include environmental topics in their lessons.	4.42	0.85	Very High
3. I have participated in environmental activities (e.g., clean-up drives, tree planting).	4.15	0.89	High
4. I am exposed to environmental education programs in school.	4.28	0.88	Very High
5. I often hear or discuss environmental topics in class.	4.18	0.91	High
6. I have attended seminars or campaigns about environmental protection.	4.25	0.86	Very High
7. My school promotes environmental awareness activities.	4.47	0.80	Very High
8. I learn about environmental issues through school projects.	4.55	0.76	Very High
9. I am encouraged to care for the environment in school.	4.30	0.84	Very High
10. I have been involved in activities related to sustainable development.	4.36	0.83	Very High
Overall	4.33	0.18	Very High

Level of Environmental Orientation

Table 3 presents the level of environmental orientation among Grade 6 learners. The results show that students demonstrate a high level of environmental orientation, with an overall mean of 3.91 (SD = 0.08). This indicates that learners are generally aware of environmental issues and possess a good understanding of environmental concepts and sustainable practices. The findings suggest that students are knowledgeable about topics such as recycling, environmental protection, and the conservation of natural resources.

Table 3. *Level of environmental orientation*

Indicators	Mean	SD	Interpretation
1. I talk about current environmental problems with my friends.	3.80	1.05	High
2. I know the plants in my environment.	3.87	0.86	High
3. I watch documentaries about living creatures.	3.83	1.02	High
4. I know where the recycling boxes are for used batteries.	3.68	1.04	High
5. I know the animals in the environment I live in.	4.16	1.04	High
6. We do less harm to the environment when we use public transport instead of cars.	3.71	1.11	High
7. I feed street animals.	4.11	1.09	High
8. We may have trouble finding clean drinking water in the future.	3.90	1.06	High
9. I know the things that can be recycled in my environment.	4.25	1.06	High
10. Random disposal of used batteries damages the environment.	3.92	1.17	High
Overall	3.91	0.08	High

The high level of environmental knowledge also implies that environmental education exposure initiatives and school-based activities contribute to increasing students' awareness of environmental concerns. Through these learning experiences, students develop a better understanding of how their actions can affect the environment. This awareness can help encourage responsible behaviors such as proper waste disposal, recycling, and caring for animals and natural resources, which are important for promoting environmental sustainability in their communities.

The findings are supported by the study of AlAli et al. (2025), which revealed that integrating sustainability practices into daily school activities strengthened students' environmental identity and promoted responsible environmental behaviors. Students engaged in practical activities, such as waste sorting and tree planting, demonstrated increased awareness of the human-nature relationship and consistently applied sustainable practices in their daily routines. Similarly, Karacaoğlu (2024) found that primary students in a school implementing a zero-waste policy exhibited high levels of environmental awareness, particularly regarding air, water, soil, and ecological balance. Participation in zero-waste initiatives enhanced students' sensitivity to environmental issues and encouraged them to adopt environmentally friendly behaviors.

Relationship Between Level of Environmental Education Exposure and Environmental Orientation

Table 4 presents the relationship between the level of environmental education exposure and the environmental orientation of Grade 6 learners. The results show a very strong positive correlation ($r = 0.62$, $p < 0.001$), indicating that as learners' exposure to environmental education increases, their environmental orientation also significantly improves. The relationship is statistically significant, leading to the rejection of the null hypothesis. This implies that effective environmental education programs in schools play a crucial role in enhancing students' understanding of environmental concepts and promoting responsible behaviors. It also highlights the importance of integrating continuous and comprehensive environmental education in the curriculum to sustain high levels of awareness and knowledge among learners.

Table 4. Relationship between level of environmental education exposure and environmental orientation

Variables	r-value	p-value	Remark	Decision
Environmental Education Exposure and Environmental Orientation	.62	< .001	Significant	Reject Ho

The findings are corroborated by Aldawsari et al. (2025), who identified an exceptionally strong positive correlation ($r = 0.848$, $p < 0.001$) between environmental education awareness and environmental responsibility among university students in Egypt. Their study indicated that students with greater exposure to SDG-aligned environmental education exhibited higher levels of environmental responsibility, with education accounting for more than 70% of the variance in responsibility scores. In a similar vein, Estrada-Araoz et al. (2023) found a very strong and statistically significant positive relationship ($r = 0.877$, $p < 0.05$) between environmental education and pro-environmental behavior among regular basic education students in the Peruvian Amazon. These results suggest that students who receive structured environmental education are more likely to demonstrate sustainable practices and consistently engage in environmentally responsible actions in their daily routines.

Conclusion

The findings of the study revealed that Grade 6 learners demonstrate a very high level of exposure to environmental education, indicating that they are extensively engaged with environmental concepts through classroom instruction, school programs, and related activities. This reflects consistent and meaningful learning experiences and suggests that environmental education is effectively integrated into the school setting. Learners also exhibited a high level of environmental orientation, demonstrating strong awareness and understanding of environmental issues and sustainable practices. The study further established a strong, significant relationship between environmental education exposure and environmental orientation, confirming that greater exposure contributes to the development of learners' environmental knowledge, attitudes, and behaviors.

Given these findings, the proposed program, Project ECO-Learn: Enhanced Environmental Awareness and Action Program for Grade 6 Learners, is designed as an enrichment initiative to sustain and strengthen existing levels of environmental education exposure. The program aims to enhance learners' engagement by promoting active participation in environmental activities and reinforcing the application of learned concepts through meaningful environmental actions. By participating in structured, participatory, and integrative learning experiences, learners are expected to deepen their environmental orientation and contribute actively to sustainability efforts within both school and community settings.

The study is grounded in Constructivist Learning Theory, which posits that learners construct understanding through engagement, reflection, and interaction with their environment (Schunk, 2020). In this context, inquiry-based activities, experiential learning, and real-world environmental tasks enabled learners to connect new concepts with prior experiences, strengthening their environmental orientation. The findings support this theoretical framework, showing that active engagement and meaningful interaction with environmental content significantly enhance learners' understanding and environmentally responsible perspectives. Additionally, by addressing the research gap identified by Cruz-Ocampo (2025), Project ECO-Learn provides a practical, evidence-based approach to integrating environmental education that reinforces both knowledge and action.

Contributions of Authors

Author 1: conceptualization, data gathering, writing of the manuscript, editing, data analysis

Author 2: writing, supervising, and revising

Author 3: supervising and revising

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Conflict of Interests

No conflict of interest.

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and standards. The researchers maintained full responsibility for the interpretation, analysis, and final presentation of the work.

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