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Level of Practice in Environmental Programs and Environmental Awareness Among Learners

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environmental programs, environmental awareness, knowledge, attitude, practices

Abstract. This study examined the level of environmental awareness among Grade 6 learners, focusing on the influence of grade level and exposure to environmental programs. Grounded in UNESCO's Environmental Literacy Framework (2017), Ajzen's Theory of Planned Behavior (1991), and Bandura's Social Cognitive Theory (1986), the research aimed to explore how knowledge, attitudes, and practices develop through formal instruction and experiential learning. Utilizing a descriptive-correlational design, the study surveyed Grade 6 learners from selected schools, employing a structured questionnaire to assess their participation in environmental programs and their awareness in terms of knowledge, attitudes, and practices. Data analysis revealed that learners consistently practiced environmental programs, with overall "Always" engagement in school activities, and demonstrated a "Very Aware" level of knowledge, attitudes, and practices. A significant positive relationship was found between learners' participation in environmental programs and their environmental awareness indicating that active involvement in experiential activities enhances both understanding and responsible behavior. The findings highlight the importance of integrating structured environmental programs into the school curriculum and promoting hands-on experiences to reinforce learning. This study provides valuable insights for educators, curriculum developers, parents, and policymakers to strengthen environmental education initiatives and foster responsible, environmentally conscious behavior among elementary pupils.

Introduction

Which facilitates sustainable development and environmental responsibility. Not even with diverse attempts to teach the environmental education as part of the basic curriculum, one can still observe certain difference in the awareness of the environment among elementary students. This difference is conditioned by many factors such as a level of the pupil and his/her exposure to environmental programs that is not in the formal classroom. It is important to learn how these factors influence environmental awareness in order to develop effective educational interventions that would make people environmentally responsible since a young age.

Literature shows that early environmental education is critical in developing attitude and behavioral patterns that would support sustainability. According to UNESCO (2017), primary school-level environmental education is the basis of environmental lifelong stewardship.

Environmental education has been receiving growing attention in the Philippines. A research article named Development of a School-Based Environmental Program through Carbon footprints of elementary Pupils discovered that elementary pupils are not ignorant of the concepts of climatic change. Nonetheless, there is an achievement gap between knowledge and action because many of them continue to be average contributors in terms of carbon emissions. Another local project is the Elementary-level tutorial program on Environmental Awareness created in Iloilo (Central Philippines) that consists of computerized tutorials on environmental pollution of air, water, and soil, waste disposal, and forest conservation-demonstrating that interactive education resources are already being created to teach young students. The study of the practices of green schools in Quezon Province also established that although elementary and secondary schools have

undertaken numerous activities in green schools, the practices given more priority are resource-sustainability practices, including effective waste management.

The Philippines Department of Education (DepEd) has published a number of memorandums to strengthen the introduction of environmental education into the curriculum. The DepEd Memorandum No. 32, s. 2017 requires the integration of the disaster risk reduction and environmental education in all grade levels to facilitate awareness and preparedness. Although such instructions have been made, the difficulty still lies on how to make sure that the instructions are being consistently applied, and the extent to which program and grade level participation are affecting the environmental knowledge of the pupils. These dynamics are starting to be examined at the local level, yet more research is necessary to offer information-based recommendations to schools and policy makers (Cruz, 2019; Reyes, 2020).

This paper is expected to address this gap by investigating level of practice environmental program and environmental awareness of learners in a public school within San Fernando District 1. The results are aimed at suggesting specific age-related, environmentally-focused advocacy programs that would be able to follow best practices as well as education policies.

Methodology

In this study, descriptive-correlational research design was used. The design is suitable since the study was intended to describe the extent of practice on environmental programs and environmental awareness among Grade 6 learners and the relationship that existed between the two variables. The descriptive part gives a descriptive analysis of the frequency of engagement by the learners in the environmental programs and also how they show environment awareness in the context of the knowledge, attitudes and practices. The correlational factor evaluates the extent to which the involvement of the learners into environmental programs is strongly linked to the degree of environmental awareness and helps discover possible correlations between practical environmental activities and environmental issues awareness. Using this research design, the research provides the patterns and relationships of practices and awareness of learners, which can be used to develop effective environmental education strategies and programs to be used during the elementary learners.

This study utilized a questionnaire adapted from established instruments measuring environmental awareness and related constructs. The questionnaire was designed to assess three key dimensions of environmental awareness among Grade 6 pupils: environmental knowledge, attitudes, and practices.

Specifically, sections assessing environmental knowledge were adapted and modified from a validated research instrument based on the *Theory of Planned Behavior of Ajzen (1991)* and the *Social Cognitive Theory of Bandura (1986).* Items were also aligned with the *Environmental Education Framework* and *Environmental Literacy dimensions* (knowledge, attitude, skills, and participation) to ensure theoretical coherence. These items were modified to ensure Appropriateness for the target population's age and comprehension level.

A letter requesting permission to conduct the study, endorsed by the Dean of the School of Graduate Studies at Valencia Colleges Incorporated (Bukidnon), will be formally submitted to the Schools Division Superintendent of the Division of Bukidnon. The purpose of the letter was to seek approval to administer and distribute questionnaires to the identified teachers in the selected schools within the division. In addition, a separate letter of request was sent to the San Fernando District 1 Schools District Supervisor and the school administrators to obtain permission to distribute the 250 questionnaires to the sampled Grade 6 learners in the participating schools.

The data collected in this research were discussed with the help of descriptive and inferential statistics. The weighted mean was adopted to establish the extent of the practice of the learners in environmental program among Grade 6 learners. This statistical means was used to get the average response of the learners and to characterize their degree of practice through the relative rating of the descriptive terms that are very high, high, moderate, low, and very low.
On the same note, another instrument used to establish the level of environmental awareness among learners was the weighted mean which was used to establish the knowledge, attitudes, as well as practices of the learners. This enabled the researcher to determine the level of environmental consciousness among the learners in both the components on the basis of the answers they gave to the questionnaire.

Moreover, in order to establish whether the level of practice in environmental programs and the environmental awareness of Grade 6 learners are significantly related or not, the Pearson Product-Moment Correlation Coefficient (Pearson r) was applied. This statistical analysis tool determined the magnitude and direction of relationship between the two variables. The level of significance was used to be 0.05. When the calculated p-value fell below 0.05, the null hypothesis was not accepted, and it showed that there was a strong association between the variables. On the other hand, when the p-value was more than 0.05 the null hypothesis was accepted which implies that there is no significant relation.

Results and Discussion

This chapter presents, analyzes, and interprets the data gathered in the study. The results are organized according to the Statement of the Problem and are presented using both tabular and textual formats. Statistical tools such as mean, standard deviation, and Pearson product-moment correlation coefficient were utilized to analyze the data.

Indicator	Mean	SD	Interpretation
Teachers discuss environmental topics in our classes.	4.44	0.835	Always
I think our school helps students become more aware of environmental problems.	4.32	1.023	Always
Our school has posters or reminders about proper waste disposal.	4.24	1.044	Always
I am encouraged by teachers and classmates to join environmental activities.	4.11	1.014	Often
Our school conducts regular environmental programs (e.g., tree planting, clean-up drives).	3.96	1.021	Often
Overall	**4.21**	**0.627**	**Always**

Table 2. Level of practice of learners in environmental programs among Grade 6 learners.

Table 2 shows that learners demonstrate a high level of engagement in environmental programs, with an overall mean of 4.21 (SD = 0.627), interpreted as *Always*. The highest-rated indicator, *"Teachers discuss environmental topics in our classes"* (M = 4.44), indicates consistent integration of environmental concepts in instruction. Learners also recognized the role of schools in raising awareness (M = 4.32) and the presence of environmental reminders (M = 4.24). Indicators related to participation, such as encouragement from teachers and peers (M = 4.11) and school environmental activities (M = 3.96), were slightly lower but still evident. These findings suggest that while environmental practices are consistently present, participation opportunities may vary. Overall, teachers, school programs, and environmental cues contribute significantly to learners' environmental practices, supporting the role of social interaction and modeling in behavior development.

Indicator	Mean	SD	Interpretation
I know what to do to help keep our school clean.	4.59	0.778	Very Aware
I know that trees help clean the air we breathe.	4.58	0.866	Very Aware
I understand why we should not throw garbage in rivers or canals.	4.50	0.856	Very Aware
I know how recycling helps protect nature.	4.25	0.899	Very Aware
I can explain how pollution affects plants and animals.	4.17	0.967	Very Aware
Overall	**4.42**	**0.562**	**Very Aware**

Table 3. Level of environmental awareness of learners in terms of knowledge

Table 3 indicates that learners are *Very Aware* of environmental concepts, with an overall mean of 4.42 (SD = 0.562). The highest-rated item, *"I know what to do to help keep our school clean"* (M = 4.59), reflects strong practical knowledge. Other indicators, such as understanding the role of trees (M = 4.58) and proper waste disposal (M = 4.50), also show high awareness. Knowledge of recycling (M = 4.25) and pollution effects (M = 4.17) further confirms that learners possess a solid understanding of environmental issues. These results indicate that learners have acquired essential environmental knowledge that can support responsible decision-making and behavior.

Indicator	Mean	SD	Interpretation
I believe keeping the environment clean is everyone's job.	4.57	0.834	Very Aware
I think planting trees is an important activity for our community.	4.48	0.941	Very Aware
I feel responsible for taking care of the environment.	4.40	0.910	Very Aware
I feel proud when I join school clean-up drives.	4.20	0.954	Very Aware
I get upset when I see others throwing garbage.	4.12	1.072	Aware
Overall	**4.36**	**0.599**	**Very Aware**

Table 4. Level of environmental awareness of learners in terms of attitudes.

Table 4 reveals that learners exhibit a Very Aware level of environmental attitudes (M = 4.36, SD = 0.599). The highest-rated indicator, "Keeping the environment clean is everyone's job" (M = 4.57), reflects a strong sense of shared responsibility. Learners also value tree planting (M = 4.48) and feel responsible for environmental care (M = 4.40). Indicators related to emotional responses, such as pride in participation (M = 4.20) and concern over littering (M = 4.12), show slightly lower but still positive responses. Overall, learners demonstrate positive environmental attitudes that support sustainable behavior.

Indicator	Mean	SD	Interpretation
I turn off lights and water when not in use.	4.62	0.673	Very Aware
I segregate waste into biodegradable and non-biodegradable.	4.39	0.881	Very Aware
I remind my classmates not to litter.	4.28	0.928	Very Aware
I participate in environmental activities organized by the school.	4.27	0.908	Very Aware
I reuse paper, plastic, and bottles when possible.	3.96	1.050	Aware
Overall	**4.30**	**0.570**	**Very Aware**

Table 5. Level of environmental awareness of learners in terms of practices.

Table 5 shows that learners are Very Aware in terms of environmental practices, with an overall mean of 4.30 (SD = 0.570). The highest-rated behavior, "I turn off lights and water when not in use" (M = 4.62), indicates strong conservation habits. Waste segregation (M = 4.39), reminding peers (M = 4.28), and participation in activities (M = 4.27) were also highly rated. The lowest indicator, "I reuse materials" (M = 3.96), suggests a need for improvement in this area. These findings indicate that learners are able to translate their knowledge and attitudes into actual environmental practices.

Variable	r	p-value	Interpretation
Level of Practice on Environmental Program	.634	.000	Significant

Table 6. Test of significant relationship between the level of practice in environmental programs and the environmental awareness of Grade 6 learners

Table 6 reveals a strong positive and significant relationship between environmental practice and awareness (r = 0.634, p = 0.000).

This means that learners who are more engaged in environmental programs tend to have higher levels of environmental awareness. The result highlights the importance of active participation in strengthening knowledge, attitudes, and practices.

Conclusion and Recommendations

It is concluded following the findings of the study as follows. Grade 6 learners have a very good implementation of environmental programs and practice them on a regular basis. The environmental awareness between learners on the areas of knowledge, attitudes, and practices is very high that means that they are knowledgeable, responsible, and concerned about ensuring environmental protection. The study also concludes that being attached to environmental programs is an important factor in environmental awareness of the learners and illustrates those learners, who get actively involved with environmental programs, develop a better understanding and positive attitude of environmental practices and this is that environmental awareness. Thus, environmental programs are useful in creating environmental awareness and environmental mainstream behavior among learners.

Based on the findings and the findings, the recommendations below are provided.

For Learners. According to the results of the study, it is good to motivate the learners to take an active part in school based and community environmental programs. Age-related activities that schools can apply include tree planting, waste segregation competitions and eco-friendly projects that can supplement the classroom knowledge. This will reinforce knowledge, attitudes and practices of learners concerning environment thus making them responsible and environmentally conscious citizens.

Teachers and School Administrators. Teachers have been advised to create and incorporate lessons that are both experiential and grade level. According to the Social Cognitive Theory, the teacher must incorporate some interactive discussions, visual findings, and practical practices that enable a learner to observe, imitate and practice the environmental behavior (Bandura, 1986). Administrators are also expected to facilitate regular school-wide programs, including ecological clubs, or clean-up drive to ensure the use of consistent reinforcement of eco-education, as the positive interaction between the exposure to the programs and eco-awareness was established in the researched research.

Curriculum Developers and Program Planners. Curriculum developers are advised to develop localized environmental education modules that mirror the mind development and realities of the learners. It should focus on the hands-on skills, critical thinking, and problem solving of the environmental scenarios through the programs. Instructional resources ought to be non-formal and formal, so to increase the degree of environmental literacy, it is necessary to combine classroom instruction with practical experiential learning in line with the UNESCO Environmental Literacy Framework (2017).

To the Parents and the Community. Environmental values should be reinforced in the house and community practice through the encouragement of the parents and other community members to promote the same. School programs should be supplemented by initiatives like recycling (led by families), neighborhood clean-ups or home gardening. With a close correlation between schools and communities, the knowledge, attitudes, and practices of learners concerning environment can be constantly modeled and practiced according to the discoveries that social norms and observation have impact on behavior (Ajzen, 1991; Bandura, 1986).

In the case of Policymakers and the Department of Education. Some of the recommendations of the policy are encouraging organized environmental education programs at all the grade levels and including non-formal programs, e.g. ecological clubs, ecological brigades and activities into the K to 12 curriculum. The policymakers should remember to allocate resources and train teachers to ensure that they are able to implement these programs. The results of the study point to the fact that increased exposure of the environmental programs shows a great enhancement of the learner awareness, which is why the continuity of the policy support should be considered the priority.

For Future Researchers. Further studies are suggested in the future to investigate other variables which could have an impact on environmental awareness including socio-economic background, the type of school, community involvement or culture. Researchers can also examine the long-term outcomes of the participation in a program or contrast various pedagogic models to learn more about the ways environmental literacy is developed in the context of interaction between experiential learning and cognitive development.

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Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Alnaib, M., Waters, S., Shanshal, Y., Caplan, N., Jones, S., St Clair Gibson, A., & Kader, D. (2012). Combined pubic rami and sacral osteoporotic fractures: A prospective study. *Aging Clinical and Experimental Research, 24*(6), 591–596.

Altieri, M. (1995). *Agroecology: The science of sustainable agriculture*. CRC Press.

An introduction to the African Convention on the Conservation of Nature and Natural Resources. (2010).

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). *Environmental education outcomes for conservation. Biological Conservation*, 241, 108224.

Arnesson, A., & Westman, S. (2022). *Can we play our way to a more circular fashion world? A quantitative study about the impact of gamification on consumer attitudes and intentions to use C2C apps* (Undergraduate thesis).

Ballew, M. T., et al. (2020). *Climate change education and student awareness. Journal of Environmental Psychology*, 70, 101429.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Brzóska, P., Nowak, B., Świerczyński, B., & Piotrowski, J. (n.d.). *Polska adaptacja skali podatności na pseudogłębokie bzdury (BSR)*.

Castro, L. L., Cawayan, W. M., Maximino, C., & Diquito, T. J. (2025). Development and acceptability of an environmental education kit for elementary learners. *Journal of Research in Environmental and Science Education, 2*(2), 81–93.

Collado, S., & Corraliza, J. A. (2020). *Children's environmental behavior. Sustainability*, 12(3).

Department of Education. (2017). *Advisory No. 32, s. 2017: Integration of disaster risk reduction and environmental activities in the K to 12 curriculum*. Republic of the Philippines.

Dinath, W. (2025). Digital literacy as a catalyst for m-commerce adoption in South Africa. In *Proceedings of the European Conference on Innovation and Entrepreneurship* (pp. 199–207).

Dzene, L., & Kļaviņa, M. (2024). Integration of EcoSchool ideas for the development of environmental consciousness in the 3rd stage of preschool education. *Education Reform, 2*, Article 8272.

Effective leadership training will replace bosses. (n.d.). *TrainingFolks*.

Erdogan, M. (2021). *Environmental education and awareness. International Journal of Environmental Education*, 16(2), 45–59.

Estepp, C., Pate, M., Johnson, D., Wardlow, G., & Hood, G. (2023). Instruction based on self-efficacy theory is effective with novices learning technical subjects. *The Agricultural Education Magazine, 96*(3), 34–38.

Factors influencing mathematics anxiety and mathematics performance: A scoping review towards learning optimization directives. (n.d.). *International Journal of Research and Innovation in Social Science*.

Folk, D., Powell, R., & Ardoin, N. (2023). *Environmental education and sustainable behavior. Environmental Education Research*, 29(4), 567–584.

Gorospe, J. R. C. (2024). Attitudes, challenges, and practices in integrating environmental education in the curriculum. *AIDE Interdisciplinary Research Journal, 9*(1).

Hambon, S. F. (2025). The implementation of ISO 9001:2015 quality management systems on the delivery of public services: City Government of Baguio. *International Journal for Multidisciplinary Research, 7*(4).

Hazelkorn, R., Schulte, B., & Cox, T. (2016). Persistent effects of begging on common bottlenose dolphin (*Tursiops truncatus*) behavior in an estuarine population. *Aquatic Mammals, 42*(4), 531–541.

Ingman, B., & McConnell, C. (2021). Ecologically minded teachers and character education. *Journal of Character Education, 17*(2), 75–83.

Jackson, M. A. (2007). *A study of children and grief: Living through bereavement* (Doctoral dissertation).

Kimleang, M., & Arsyad, S. (2022). EFL students' attitude toward learning the English language based on teacher's gender: A case study in Cambodia context.

Kithinji, M. K., Muinde, M. N., & Walubuka, E. (2025). Outbound activities and supply chain performance of tea factories in Embu County, Kenya. *International Journal of Supply Chain and Logistics*.

Kooij, K. L., Andreani, N. A., Van der Gun, L. L., Keller, L., Trinh, S., Van der Vijgh, B., Luijendijk, M., Dempfle, A., Herpertz-Dahlmann, B., Seitz, J., Van Elburg, A., Danner, U. N., Baines, J., & Adan, R. A. (2024). Fecal microbiota transplantation of patients with anorexia nervosa did not alter flexible behavior in rats.

Kpodoe, I. A., Ampratwum, J., Ntoaduro, A., & Yeboah, F. (2019). Experiences of students with visual impairment in higher education in Ghana: Bodily perspective on inclusive education.

Lagura, R., Gamiao, B., & Aragon, J. (2022). Development of a school-based environmental program through elementary pupils' carbon footprints. *American Journal of Multidisciplinary Research & Innovation*.

Lisboa, P. V., Gómez-Román, C., Guntín, L., & Monteiro, A. P. (2024). Pro-environmental behavior, personality, and emotional intelligence in adolescents: A systematic review. *Frontiers in Psychology, 15*, Article 1323098.

Liu, J., & Green, R. (2024). Children's pro-environmental behaviour: A systematic review of the literature. *Resources, Conservation & Recycling, 205*, Article 107524.

Lorio, C. (2022). *Selection of optimum active treatment technology for acid mine drainage (AMD) using spherical fuzzy analytic hierarchy process (SFAHP)*.

Mey, A., & Loog, M. (2022). Improved generalization in semi-supervised learning: A survey of theoretical results. *IEEE Transactions on Pattern Analysis and Machine Intelligence*.

MYO, A. M. M. (2023). *The effect of beliefs on intention and behaviour of speeding among young drivers in Norway: The use of the theory of planned behaviour*.

NAAEE. (2019). *K–12 environmental education: Guidelines for excellence*. North American Association for Environmental Education.

Nguyen, M. H., Duong, M. P. T., Tran, T. M. A., Sari, N. P. W. P., Huni, C., La, V. P., & Vuong, Q. H. (n.d.). Comparative study of the effectiveness of Chinese mothers and fathers in influencing children's waste reusing and recycling behaviors.

Otto, S., & Pensini, P. (2017). *Environmental education improves environmental behavior. Journal of Environmental Psychology*, 31(4).

Palmer, J. (1998). *Environmental education in the 21st century: Theory, practice, progress and promise*. Routledge.

Piscová, V., Lehotayová, J., & Hreško, J. (2023). Environmental education in the school system at elementary schools in Slovakia. *European Journal of Science and Mathematics Education, 11*(4), 650–671.

Rizan, C., Shamsudin, S., & Sulaiman, T. (2021). *Environmental awareness among students. Sustainability*, 13(4).

Schopp, L. H., Good, G. E., Barker, K., Mazurek, M. O., & Hathaway, S. L. (2006). Masculine role adherence and outcomes among men with traumatic brain injury. *Brain Injury, 20*(13–14), 1345–1355.

Srinak, N., Chiewchankaset, P., Kalapanulak, S., Panichnumsin, P., & Saithong, T. (2024). Metabolic cross-feeding interactions modulate the dynamic community structure in microbial fuel cell under variable organic loading wastewaters. *PLoS Computational Biology*.

Stevenson, R. B., et al. (2021). *Environmental education in schools. Environmental Education Research*, 27(3).

Sunarno, A., Suryadi, S., Karliani, E., & Sangalang, R. H. (2024). The environmental awareness character of elementary school students in the Kahayan River Basin: A comparative study in rural and urban areas. *Jurnal Teori dan Praksis Pembelajaran IPS, 9*(2), 102–113.

Triyandana, A., Ibrohim, I., Yanuwiyadi, B., Amin, M., & Hajare, M. U. (2024). Strategies to enhance eco-friendly culture and environmental awareness by green curriculum integration in Indonesian elementary science classrooms. *ERIC* (EJ1462045).

Tuazon, K. J. L., Moñadera, S. P., Corpuz, J. T., Mijares, A. M. I., Singh, R. C., & De Guzmán, S. D. (2024). Assessing the impact of environmental education on sustainable practices: A semi-systematic literature review. *International Journal of Arts and Social Science, 7*(11), 127–146.

UNESCO. (2017). *Education for sustainable development goals: Learning objectives*. United Nations Educational, Scientific and Cultural Organization.

van de Wetering, J., Leijten, P., Spitzer, J. E., & Thomaes, S. (2022). Does environmental education benefit environmental outcomes in children and adolescents? A meta-analysis. *Journal of Environmental Psychology, 81*, Article 101782.

WHO. (2020). *Sustainable food systems and healthy diets: Key to ending hunger and malnutrition*. World Health Organization.

Wu, Y., Wan, J., & Yu, W. (2023). Impact of environmental education on environmental quality in the background of a low-carbon economy. *Frontiers in Public Health, 11*, Article 1128791.

Yin, A., & Liu, Z. (2025). How can climate adaptation policy enhance urban climate resilience? Empirical evidence from China. *PLoS ONE, 20*(11), e0335736.

Zhang, H., & Li, X. (2025). Biodata-driven knowledge graph recommendation system: Fusing foot and leg characteristics for personalised shoe recommendation. *Applied Sciences, 15*(20), 11281.

Appendices

No appendices are attached to this study.