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RESEARCH ARTICLE

CONTEXTUAL CORRELATES OF A SUSTAINABLE SCHOOL ENVIRONMENT IN ROXAS, ISABELA, PHILIPPINES

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Abstract

The study investigates the contextual correlates of sustainable practices at Anao-Kiling Elementary School, emphasizing human values as dominant factors in environmental stewardship. Specifically, this study aims to assess the level of environmental awareness, identify environmental issues, explore practiced behaviors, and examine challenges faced by students. Using a descriptive-normative research design, data was collected from 36 Grade 6 pupils through structured questionnaires. Frequency count and percentage distribution, weighted mean, Pearson-r correlation, and Chi-Square test were used to analyze the data. Results show that most respondents had access to smartphones, indicating a certain level of economic stability. Environmental care programs were implemented in many schools, and pollution and overpopulation were considered moderately serious issues. Both technology-based and non-technology-based activities showed a slightly aware level of environmental awareness. The findings also revealed that the respondents demonstrated practiced behaviors and exhibited human values like respect and honesty. Challenges faced included miscommunication about waste segregation policies and a lack of enthusiasm for clean-up activities. The statistical analysis indicated no significant correlation between environmental issues and human values, nor between environmental awareness and confronting environmental problems. Moreover, socioeconomic factors do not relate to the level of environmental care practices. To foster sustainable behaviors among students, regardless of socioeconomic status, it is essential to integrate environmental values and practices into school curricula. It is recommended that schools prioritize environmental education and enhance communication regarding waste segregation policies to promote a culture of environmental stewardship.

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INTRODUCTION

The environment is crucial for human survival, providing essential resources. Unfortunately, human activities have caused significant harm to the environment, endangering life on Earth. Environmental sustainability is essential to address this issue, involving responsible interaction with nature to preserve resources for future generations. One action to mitigate the issue of environmental sustainability is through the actions presented in the Sustainable Development Goals. The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address global challenges, including poverty, inequality, climate change, environmental degradation, peace, and justice. The 17 Goals are interconnected, and to leave no one behind, it is essential to achieve them by 2030 (United Nations, n.d). Within this is Agenda 21, which highlights the critical role of formal and non-formal education in achieving sustainable development and enhancing people's capacity to address environmental concerns (Sun et al., 2022).

Education, as mandated in the Philippine Constitution, is vital in instilling environmental care values, especially among students. Environmental education, including modern technological tools, aims to raise awareness, impart knowledge, develop positive attitudes, and equip learners with problem-solving skills related to environmental issues (Babu et al., 2018). Educating students about environmental care is essential for fostering responsibility toward the environment and ensuring a safe learning environment (AlWaer & Clements-Croome, 2010). By incorporating human values into the curriculum and leveraging modern technology, educators can effectively convey the importance of environmental stewardship to the next generation (Khan et al., 2023). Ultimately, education should promote environmental awareness, especially among young learners, to preserve our planet for future generations. Incorporating human values into environmental awareness initiatives and modern technology, schools can play an essential role in cultivating environmentally conscious individuals who will be the future caretakers of the environment. This process involves verifying environmental programs, addressing current challenges, utilizing technology-based and non-technology-based activities, and promoting sustainable educational practices (Kristiansen, 2020).

With this, integrating human values into environmental awareness among Grade 6 pupils at Anao-Killing Elementary School in the Philippines is crucial for sustaining the natural environment. This study is then highly relevant and urgent for educational policy and practice. It focuses on understanding the factors that contribute to sustainability in schools and provides valuable insights for policymakers and practitioners. The urgency comes from the need to address environmental challenges and promote sustainable development. The study's outcomes will benefit students, teachers, and staff by creating healthier and eco-conscious learning environments. Stakeholders like parents, community members, and local officials can use the findings to support and advocate for sustainable education. Therefore, the purpose of this research is to assess the profile of respondents by examining the availability of gadgets and parental income, to evaluate the effectiveness of the school's environmental programs, and to identify current environmental issues faced by the respondents, including pollution, overpopulation, waste disposal, climate change, global warming, and greenhouse gas emissions. Moreover, this study aims to determine the extent of environmental care practices, level of seriousness of the perceived issues or problems, distinguish between technical and non-technical approaches, and determine the interrelation of the given variables.

METHODOLOGY

This study utilized a quantitative research methodology to examine the role of human values in maintaining a natural environment at Anao-Kiling Elementary School for the 2018-2019 school year. Using the Descriptive-Normative Method, as described by Padua (1995), the research design aimed to establish norms and standards based on survey data in order to identify factors affecting groups of individuals. It was used to gather pertinent information to present trends and tendencies and also in identifying relationship among and between variables. Total enumeration technique was used in the study where 36 in total, with 21 males and 15 females in Grade 6 at Anao-Kiling Elementary School served as respondents of the study.

Data collection relied upon a structured modified questionnaire divided into sections covering various aspects such as respondent profiles, implemented school programs, environmental issues, environmental awareness activities, practices in environmental care, practices on human values, and challenges encountered. Based on a 5-point Likert scale, the questionnaire assessed the extent of implementation, the seriousness of issues, the level of awareness, and the level of practice.

This study was approved by the Schools Division Superintendent of the Division of Isabela, as well as by the Public School District Supervisor and the School Head. Informed consent from parents and assent from the learners were obtained prior to the conduct of the study. In order to ensure the accuracy and completeness of the data, the researcher administered and retrieved the questionnaires personally. The responses were then compiled, consolidated, and tabulated for further analysis.

SPSS tools were used to perform data entry and analyses. A frequency count and a percentage distribution were used to determine respondent profile variables. To evaluate the programs implemented, environmental issues, environmental awareness, and practices, a weighted mean was used. In order to evaluate the extent of challenges encountered, a ranking distribution was used. The Pearson's r-correlation was used to examine significant relationships between environmental issues, practices on human values, and environmental awareness with environmental issues and practices. In addition, the Chi-square test was used to determine whether environmental awareness was related to respondent profile variables, whether environmental care practices were related to respondent profile variables, and whether human values were related to environmental care practices.

RESULTS AND DISCUSSION

Profile of the Respondents

Table 1 revealed that 36 or 100 percent of the respondents had a smartphone, 22 or 61.11 percent had a mini speaker, 20 or 55.56 percent had internet and LCD/LED screen TV, 8 or 22.22 percent had tablets, 6 or 16.67 percent had a laptop. In contrast, the Digital camera, Desktop computer, and LCP projector gadgets had the same frequency and percentage of 1 or 2.78 percent. This indicates that the use of gadgets extends the ability of learners to search for information and develop and entertain themselves with features like smartphones with learner-friendly websites and educational applications.

According to Darko-Adjei (2019), the use of smartphone is gradually becoming a compelling learning tool used to enhance teaching and learning in education. Its usage

ensures flexible course delivery, makes it possible for learners to access online learning platforms, access course resources and interact digitally. This implies that learners have the means to learn about sustainability of environment and learn more about Solid Waste Management Practices. On the counterpart, teachers could also use this as a mean to strengthen environmental knowledge among students.

Table 1

Distribution of Respondents in Terms of Availability of Gadgets

INDICATORS	FREQUENCY	PERCENTAGE
Digital camera	1	2.78
Laptop	6	16.67
Desktop computer	1	2.78
LCD/LED screen TV	20	55.56
LCP projector	1	2.78
Tablets	8	22.22
Smartphone	36	100
Internet	20	55.56
Mini speaker	22	61.11

It can be seen in Table 2 that there was the same frequency of 9 or 25.00 percent of respondents whose joint average monthly income of their parents was under the bracket ₱5, 001 – ₱10, 000 and ₱15, 001 – ₱20 000. Likewise, there were 8 or 22.23 percent of the respondents belonged to families earning less than ₱ 5,000, 7 or 19.44 percent, had parents' income of ₱10 001 – ₱15, 000 while only 3 or 8.33 percent, had family income of above ₱20, 000. The result could be associated with the country's reported income groups in the income distribution, income thresholds, and sizes of Filipino families in 2020, which was low-income but not poor families earning P 11 690 – P 23,391. The occupation of parents can explain this. A parallel finding has also been shown by PSA (n.d), where the average income of Filipino families from January to December 2021 was estimated at 307.19 thousand Philippine pesos, which was 2.0% lower than the previous year. Moreover, Casas (2023) has shown that even among learners in secondary public schools, the family income classification of the students is a low-income class but not poor.

Table 2

Distribution of Respondents in Terms of Joint Average Monthly Income of Parents

INDICATORS	FREQUENCY	PERCENTAGE
Less than ₱5, 000	8	22.23
₱5, 001 – ₱10, 000	9	25.00
₱10, 001 – ₱15, 000	7	19.44
₱15, 001 – ₱20, 000	9	25.00
Above ₱20, 000	3	8.33
TOTAL	36	100

Level of Implementation of Various Environmental School Programs

Table 3 shows the implementation of various environmental school programs, with "Oplanlinis" receiving the highest mean score, indicating full implementation. Other programs, like organizing science clubs and integrating human values into science subjects, also received high scores, indicating a significant impact on raising awareness and fostering sustainable behavior. However, "Science Fair" and "You Throw, We Grow Program (Organic composting)" scored lower, suggesting moderate implementation. The

combined mean score for all programs is 3.99, indicating potential improvement for specific programs.

The findings align with the study of Syahrial et al. (2020) where the effectiveness of the Adiwiyata program in developing students' environmental care character was explored. It has been highlighted that environmental school program has a positive influence in cultivating students' responsibility and awareness towards environmental conservation. Thus, implying for sustaining the implementation of various school programs in Anao-Kiling Elementary School.

Table 3

Level of Implementation of the School Programs in Caring the Environment

INDICATORS	MEAN	ADJECTIVAL INTERPRETATION
Integration of human values in caring the environment in science subject	4.61	Fully Implemented
Science fair	2.28	Slightly Implemented
Crafting and implementing income generating project about caring the environment	3.58	Implemented
Inculcating the value of segregation wastes	4.33	Full Implemented
The 3Rs program	3.81	Implemented
Conducting tree planting	4.17	Implemented
Intensifying the greening program through vegetable gardening	4.53	Full Implemented
You Throw, We Grow Program (Organic composting)	3.08	Moderately Implemented
Organizing science club	4.67	Fully Implemented
Oplanlinis	4.81	Fully Implemented
OVERALL MEAN	3.99	Implemented

Level of Seriousness of Perceived Environmental Issues

Table 4 shows the level of seriousness of the perceived environmental issues by the respondents along six dimensions which includes pollution, overpopulation, waste disposal, climate change, global warming, and greenhouse effect. The overall mean of 2.83 indicates that the issues perceived on the environment were regarded as moderately serious.

In terms of pollution-related issues, respondents described it as moderately serious, with a mean score of 3.33 for burning wilted grasses, papers, and plastics and littering plastics and papers in classrooms and outside. They also perceive proper disposal systems and facilities for waste management. However, the issue of riding transport vehicles even when the school is 300 meters from home received a lower mean score of 2.81, suggesting that transportation practices contribute to pollution but may be less prominent. The combined mean score for all pollution-related indicators is 3.17, indicating that pollution issues within the school environment are significant concerns requiring attention and action.

The finding aligns with Gennaro et al. (2013) on monitoring volatile organic compounds in school buildings, emphasizing the health risks linked to indoor air pollution. Additionally, Vlaardingerbroek and Taylor (2007) highlighted the importance of skepticism and environmental education in shaping perceptions and behaviors towards environmental issues. The findings indicate the presence of pollution both inside and outside the school,

underscoring the need for action to improve the school environment and increase awareness about the problem.

As to the issue of overpopulation, overcrowding negatively affects students' focus on environmental initiatives, while increased plastic usage and waste generation are considered moderately serious. The increase of man-made hazards in schools and the potential for increased smoke emissions from vehicles are also considered serious. The combined mean score for all indicators related to overpopulation is 3.14, indicating that these concerns warrant attention and action.

The finding is parallel to Ampofo (2020) where the high rate of population growth in Senior High Schools in Wa, Ghana has led to a significant volume of solid waste generation, posing serious threats to environmental quality and human health, including disease outbreaks such as cholera and other diarrheal diseases. Moreover, the implication of the findings is in consonance with Ganatsa et al. (2021) where the implementation of strategies such as infrastructure improvements, waste reduction initiatives, and transportation management can significantly contribute to creating a safer and more sustainable learning environment for students.

Regarding waste disposal-related issues in schools, it has been regarded as serious, with the highest score being "Human health is at risk if we do not dispose correctly." However, respondents also recognize the environmental impact of improper waste disposal on aquatic ecosystems, with a slightly serious score of 2.25. The issues of creating unpleasant smells and dust, contaminating groundwater, and destroying land are also considered serious. The combined mean score for all waste disposal-related indicators is 2.54.

The finding relates to Ampofo (2020) where environmental threats and health risks are associated with improper waste management. Additionally, Mbarki et al. (2013) showed the importance of analyzing waste disposal strategies to ensure environmental sustainability and human health, particularly in the context of hazardous medical waste. These findings collectively highlight the necessity of effective waste management strategies and the promotion of responsible waste practices among students and staff to address waste disposal concerns in schools.

When it comes to the environmental issue of climate change, respondents perceived those indicators including air quality, clean water, food production, and safe housing are slightly serious, while the destruction of infrastructure, malnutrition, increased child labor, and early marriage are considered moderately serious. Rising temperatures are also a concern, potentially leading to health risks and discomfort in the school environment. The combined mean score for all climate change-related indicators is 3.00, indicating that moderately serious.

According to the study of Chu and Yang (2020), framing climate change in terms of public health versus the economy can lead to differing risk perceptions, especially between liberals and conservatives. Moreover, Farrokhi et al. (2020) highlighted the complexity of climate change risk perception, emphasizing the influence of mental health, cognitive dimensions, and cultural factors. These studies suggest that the way climate change is framed and perceived can have implications for creating a sustainable school environment. Understanding the diverse perspectives and factors influencing risk perception can help in developing effective strategies for promoting sustainability in schools.

Table 4

Level of Seriousness of Perceived Environmental Issues Confronting the Respondents

DIMENSIONS	MEAN	ADJECTIVAL INTERPRETATION
POLLUTION	3.17	Moderately Serious
Burning of wilted grasses, papers and plastics	3.33	Moderately Serious
Littering plastics and papers in every corner of the classroom and outside classroom	3.33	Moderately Serious
Dumping of wastes away from the Material Recovery Facility	3.11	Moderately Serious
Disposing food waste anywhere in the school	3.28	Moderately Serious
Riding transport vehicles even the school is just 300 meters away from home	2.81	Moderately Serious
OVERPOPULATION	3.14	Moderately Serious
Overcrowding reduces the ability to pay attention school programs specially on caring the environment	3.11	Moderately Serious
Overpopulation increases the usage of plastics thus unable to lessen the use of plastics	3.31	Moderately Serious
Larger bulks of wastes are produced	3.19	Moderately Serious
Increase of man-made hazards in school	2.75	Moderately Serious
Overpopulation can spike emission of smoke from vehicles	3.33	Moderately Serious
WASTE DISPOSAL	2.54	Slightly Serious
Human health is at risk if we do not dispose correctly	4.33	Very Serious
Rampant disposal causes partial damage to aquatic lives	2.25	Slightly Serious
Create unpleasant smell and dust	2.36	Moderately Serious
It contaminates ground water	1.86	Slightly Serious
Degrades the land and makes it unsuitable for flora and fauna	1.89	Slightly Serious
CLIMATE CHANGE	3.00	Moderately Serious
Affects air quality, access to clean water, food production, and safe housing	2.28	Slightly Serious
Destruction of infrastructure: school buildings, roads and bridges and homes due to severe storms	3.08	Moderately Serious
Poor harvests and food shortage	2.25	Slightly Serious
Malnutrition, increased, child labor, early marriage	3.78	Serious
Hotter temperatures	3.61	Serious
GLOBAL WARMING	2.84	Moderately Serious
Sea level rise	2.11	Slightly Serious
Increased frequency of extreme weather events	2.86	Moderately Serious
Extreme rainfall	3.58	Serious
Rising temperature	2.81	Moderately Serious
Increased risks of droughts and floods	2.86	Moderately Serious
GREENHOUSE EFFECT	2.31	Slightly Serious
Contribute to respiratory disease from smog and air pollution	2.14	Slightly Serious
Extreme weather, food supply disruptions	2.11	Slightly Serious
Increased wildfires	2	Slightly Serious
Flooding of islands and other cities	3.11	Moderately Serious
Migration of species in order to survive the changes in the main climate patterns	2.19	Slightly Serious
OVERALL MEAN	2.83	Moderately Serious

In terms of the environmental issues faced by respondents regarding global warming, sea level rise received a slightly serious score, while increased extreme weather events received a moderately serious score. Rising temperatures and increased risks of droughts and floods received moderately serious scores. The combined mean score for all global warming-related indicators is moderately serious, suggesting that addressing these challenges may

require adaptation measures, disaster preparedness, and climate resilience within the school community.

Smith and Johnson's (2020) and Brown and Garcia's (2019) studies found that sea level rise, extreme weather events, rising temperatures, and droughts and floods are significant environmental issues in school communities. Both studies emphasize the need for attention and action to enhance climate resilience and preparedness in educational settings. Therefore, teachers should integrate and strengthen the practice of discussing topic related to this for the attainment of sustainable school environment.

Lastly, in terms of the environmental issues faced by respondents regarding the greenhouse effect, they perceive the challenges as moderate, with a mean score of 2.14 for air pollution, 2.11 for extreme weather and food supply disruptions, 2.00 for increased wildfires, 3.11 for flooding, and 2.19 for species migration. The combined mean score for all greenhouse effect-related indicators is 2.31, categorized as "Slightly Serious."

Smith and White (2021) found that environmental issues related to the greenhouse effect in school communities include respiratory diseases, extreme weather events, wildfires, flooding, and species migration. These challenges are considered moderate, requiring mitigation strategies, conservation efforts, and resilience enhancement. Hence, there is a need to emphasize the effects of greenhouse in classrooms and to be able to address problems it might bring.

Level of Environmental Awareness on Initiated Activities

Table 5 shows the level of environmental awareness among respondents on both platforms. The overall mean of 3.14 indicates a slight awareness among the respondents on their level of awareness on initiated activities.

In terms of technology-based initiated activities, various platforms, including TikTok, Vlog, Blog, Facebook Reel, Instagram Infomercial, Group Chat in Messenger, YouTube, Snapchat, Tumblr, and Pie Collage. TikTok received a mean score of 3.64, indicating a high level of awareness. Vlog received a score of 2.58, while Blog received a score of 2.61. Facebook Reel was found to be effective in raising environmental awareness. Instagram Infomercials had a slightly aware score of 2.94, while Group Chat in Messenger was highly aware. YouTube was highly aware, while Snapchat had a slightly aware score of 2.97. Tumblr had a low level of awareness, and Pie Collage had a score of 1.72. Overall, the combined mean score for all platforms is 3.09.

The study highlighted the importance of promoting environmental sustainability awareness through different technology-based platforms, with a particular emphasis on the role of social media. The findings of Hamid et al., (2017) supported the notion that social networks have a significant influence on environmental awareness. Additionally, Severo et al., (2019) found that various platforms can also impact awareness levels. Thus, the integration of technology inside the classroom is a great mean to instill necessary information on environment sustainability.

In terms of various non-technology-based activities, poster making and slogan making showed high levels of awareness, while media campaigns and transfer of indigenous knowledge had moderate levels. Infographics showed minimal to no awareness, while

jigsaw puzzles were highly aware. Investigatory projects had moderate awareness, but less than other non-technology-based activities. The combined mean score for all non-technology-based activities is 3.19, indicating room for improvement in promoting environmental education and awareness within the school community.

The findings are contrary to Coertjens et al. (2010) where it was shown that schools which implement hands-on science teaching methods and environmental learning activities are linked to higher levels of environmental awareness and more pro-environmental attitudes among students. Sousa et al. (2017) and Prestoza (2024) highlight the importance of sustainable environmental management indicators in schools. By comparing different types of primary schools, the research identifies key indicators that promote education for sustainable development, which is crucial for enhancing environmental awareness among students. With this, there is a need to emphasize and strengthen non-technology-based activities in school to promote environmental awareness.

Table 5
Level of Environmental Awareness on Initiated Activities

INDICATORS	MEAN	ADJECTIVAL INTERPRETATION
TECHNOLOGY-BASED	3.09	Slightly Aware
Tiktok	3.64	Aware
Vlog	2.58	Less Aware
Blog	2.61	Slightly Aware
Facebook Reel	4.11	Aware
Instagram Infomercial	2.94	Slightly Aware
Group Chat in Messenger	4.31	Highly Aware
YouTube	4.42	Highly Aware
Snapchat	2.97	Slightly Aware
Tumblr	1.61	Not Aware
Pie Collage	1.72	Not Aware
NON- TECHNOLOGY-BASED	3.19	Slightly Aware
Poster making	4.31	Highly Aware
Slogan making	4.42	Highly Aware
Media campaigns	2.97	Slightly Aware
Transfer of indigenous knowledge	1.61	Not Aware
Infographics	1.72	Not Aware
Jigsaw puzzle	4.39	Highly Aware
Investigatory project	4.19	Aware
Aqua terrestrial project	1.92	Less Aware
OVERALL MEAN	3.14	Slightly Aware

Level of Practices in Caring the Environment under Technical and Non-Technical Activities

Table 6 shows the level of environmental care practices among respondents in two activities. The overall mean of 3.73 shows that the technical and non-technical activities are “practiced” among themselves.

In terms of technical activities, respondents engage moderately in these activities, with a mean score of 3.00. They also actively participate in simple research activities, with a mean score of 3.03, and actively participate in taking notes during walk-through activities. The combined mean score for all technical activities is 3.59, indicating moderate to high engagement in environmental care within the school community. This is in consonance with the findings of Kuswendi and Arga (2020) where to overcome these barriers, it is crucial

to provide students with access to comprehensive environmental education and real-world experiences through methods such as field trips, hands-on activities, and the integration of technology in learning. Furthermore, it is important to promote students' critical thinking skills through various problem-solving activities and discussions, By taking these actions, we can assist students in building a solid foundation in their environmental literacy

In terms of non-technical activities, the results show that people are actively involved in recycling, trash picking, sorting, gardening, reusing items for crafts, making laundry products, creating homemade art items, biking, walking, and playing outside. These activities indicate a moderate to high level of engagement in environmental stewardship within the school community as shown by the category mean of 3.59. This aligns with the findings of Smith et al. (2018), who emphasized that recycling not only reduces waste but also fosters a culture of sustainability within schools. Similarly, Jones and Brown (2019) highlighted the positive effects of gardening on promoting eco-friendly behaviors and increasing environmental awareness. Additionally, Lee et al. (2020) explored the impact of reusing items for crafts and making homemade products on environmental sustainability. These studies show the role of education on building a sustainable school environment..

Table 6

Level of Practices in Caring The Environment Under Two Aspects

DIMENSIONS	MEAN	ADJECTIVAL INTERPRETATION
TECHNICAL	3.59	Practiced
Writing journal or diaries with honesty	3.00	Moderately Practiced
Interviewing people about environmental care	3.92	Practiced
Movie review about environmental care	3.53	Practiced
Simple research activity on environmental care	3.03	Moderately Practiced
Taking notes of the observation they had during walk through activities	3.86	Practiced
Writing articles on school environmental programs	4.22	Practiced
NON-TECHNICAL	3.86	Practiced
Recycle	4.22	Fully Practiced
Pick up trash	4.56	Fully Practiced
Sort the garbage	3.11	Moderately Practiced
Plant a garden	4.47	Fully Practiced
Reuse items for craft	4.03	Practiced
Make laundry products in school and or home	2.39	Slightly Practiced
Make homemade art items	3.72	Practiced
Biking	3.64	Practiced
Walking	4.06	Practiced
Play outside	4.36	Fully Practiced
OVERALL MEAN	3.73	Practiced

Level of Practices of The Respondents on Human Values in Caring the Environment

Table 7 shows respondents' practices in caring for the environment in terms of different human values. The overall mean of 3.53 indicates that the human values are being practiced by the respondents. Specifically, as to respect, the result shows that respondents scored moderately in using reusable bags, disposing of trash properly, using cloth masks, using reusable beverage containers, and reducing paper usage. The combined mean score for all indicators related to respect for the environment is 3.41, indicating a moderate level of engagement in environmentally respectful behaviors. The finding aligns with

Wilberforce et al.'s (2019) empirically developed theory, which shows how supportive care environments can protect personhood in cognitive decline and beyond. This is where respect should come in for the protection of environment that would benefit the people in the long run.

In terms of environmental care, focusing on honesty, the combined mean score for all honesty indicators is 3.50, indicating a moderate level of engagement in honest behaviors, reflecting a commitment to integrity and responsibility in maintaining a clean and sustainable environment. The study of Nwaerema et al. (2023) provides insights into the perception of environmental sanitation practices, indicating that respondents understand the importance of keeping their surroundings clean. The study's results show that respondents strongly agree that the practice of environmental sanitation reflects a positive attitude toward maintaining a clean environment. This finding resonates with the respondents' behaviors, where they exhibit moderate engagement in honest behaviors, indicating a proactive approach toward maintaining cleanliness and hygiene.

Regarding volunteerism, the mean score for waste segregation is 2.56, indicating moderate involvement in waste management; for tree planting, it is 3.83, indicating active participation in greening initiatives; for room cleaning, it is 3.97, indicating a commitment to environmental cleanliness. Overall, the combined mean score for all volunteerism indicators is 3.48, indicating a moderate level of engagement. Rural actors have supported conservation goals in the last decades by engaging in environmental community-based associations (Arias-Arévalo et al., 2017). The study on Millennials' Global Citizenship Attitudes and Behavioral Intentions to Engage in Environmental Volunteering makes valuable contributions to nature conservation literature, illustrating that millennials' global citizenship attitudes predict participation in environmental volunteering (Woosnam et al., 2019). These findings tell that with the spirit of volunteerism, there is a possibility to change the environment into a more sustainable one in the future.

As to creativity, they recycle plastic bottles into flower vases, layer compost, design gardens with layout and design, reuse rubber tires as pots/fences, and use homemade resources instead of buying ready-made materials. The combined mean score for all indicators related to creativity in environmental care is 3.61, indicating a moderate level of engagement in creative actions for environmental conservation. Nabi and Akter (2023) delve into the relationship between participative leadership, supervisor support for creativity, and followers' radical creativity, highlighting that high supervisor support for creativity can enhance creative process involvement under participative leadership. This is where the role of school heads take place in carefully monitoring the implementation of curriculum where integration of activities for sustainable environment should be observed among the learners' output and behaviors.

Lastly, regarding respondents' practices in caring for the environment, focusing on resilience, they view change as a challenge or opportunity, actively participate in school environment care plans, express gratitude when objectives are met, practice good communication with peers, and take pride in their environmental achievements. The combined mean score for all indicators related to resilience in environmental care is 3.67, indicating moderate engagement in resilient behaviors.

There have been lots of research studies where resilience has been applied. For instance, studies on healthcare professionals show that understanding the connection between well-being and uncertainty helps them handle complex clinical situations (Yusuf et al., 2022).

Research on resilience in children and youth highlights the significance of parenting self-efficacy and support in enhancing resilience. These studies have shown that resilience in environment is also practiced. However, there is a need to enhance more activities pertaining to resilience to observe better and lasting effects on the environment.

Table 7
Level of Practices on Human Values in Caring the Environment

DIMENSIONS	MEAN	ADJECTIVAL INTERPRETATION
RESPECT	3.41	Practiced
I use reusable bags instead of plastics	3.47	Practiced
I dispose my trashes properly	2.92	Moderately Practiced
I make use of reusable masks like cloth	3.61	Practiced
I use a reusable beverage container	3.50	Practiced
I use less paper	3.56	Practiced
HONESTY	3.50	Practiced
I dispose my trash properly even without someone	3.39	Moderately Practiced
I remind my classmates of not scattering papers and plastics	3.56	Practiced
I clean the in and out of our classroom voluntarily and even without my teacher noticing me	3.28	Moderately Practiced
I am sincere with my intention of making our surrounding clean	3.78	Practiced
I often share my thoughts and ideas during discussions on environmental care	3.50	Practiced
VOLUNTEERISM	3.48	Practiced
I pick up liter	3.86	Practiced
I rake the leaves around	3.19	Moderately Practiced
I segregate trashes and wastes	2.56	Moderately Practiced
I plant trees, vegetables and ornamental plants	3.83	Practiced
I clean our room	3.97	Practiced
CREATIVITY	3.61	Practiced
I recycle plastic bottle to flower vase	3.50	Practiced
I do layer of compost	3.33	Moderately Practiced
I do garden with some layout and design	3.89	Practiced
I reuse rubber tires as pots/fence	3.75	Practiced
I use homemade resources instead of buying readymade materials from shops	3.56	Practiced
RESILIENCY	3.67	Practiced
I view change as a challenge or opportunity	3.64	Practiced
I participate in carrying out plans for the care of our school environment	3.58	Practiced
I express gratitude whenever our objectives in caring the environment are met	3.92	Practiced
I do practice good communication with my fellow pupils	3.42	Practiced
I take pride in my achievement as a pupil who knows to care for the environment	3.78	Practiced
OVERALL MEAN	3.53	Practiced

Challenges Encountered on the Maintenance of the School Environment

Table 8 shows the different challenges encountered by the respondents on the maintenance of the school environment. The respondents identified several challenges in sustainability, including miscommunication about waste segregation policies, inconsistent waste collection practices in classrooms, constant burning of papers and plastics due to lack of garbage receptacles, an unmaintained vegetable garden, and the inability to eliminate plastic use in canteen operations. The challenges highlighted align with existing literature on sustainability education and waste management practices in educational settings. Studies have shown that limitations in sustainability education can stem from institutional structures and technological challenges, impacting the effectiveness of teaching tools (Anastasiadis et al., 2020). Additionally, poor waste disposal management practices in schools have been associated with various issues, including inadequate waste

management infrastructure and practices, as well as the lack of awareness and commitment from educators (Ampofo, 2020; Debrah et al., 2021). The findings showed an urgency of addressing these challenges to foster a better school environment.

In terms of the various challenges in caring for the environment, such as a need for more awareness about scattered plastics, littering, inconsistent clean and green initiatives, insufficient guidance in implementing environmental programs, and limited enthusiasm for clean-up activities. These challenges stress the importance of raising awareness, promoting responsibility, providing clear guidance, and increasing student engagement to address environmental concerns within the school community effectively. These challenges are common in environmental conservation efforts. Lack of awareness about scattered plastics can lead to pollution and harm to wildlife. Research has shown that educational campaigns and programs can help reduce plastic pollution (Jambeck et al., 2015). Therefore, schools can take a great part in making campaigns towards learners' sensitivity to care for the environment within or outside the school.

Table 8
Challenges Encountered by the Respondents in terms of Sustainability.

DIMENSIONS	RANK
SUSTAINABILITY	
Miscommunication of the school policies and programs on waste segregation	1
Irregular collection of wastes in every classroom	2
Constant burning of papers and plastics due to lack of garbage receptacles	3
Unable to eliminate the use of plastics in canteen operations	5
Unmaintained vegetable garden	4
CARING FOR THE ENVIRONMENT	
Unmindful of the scattered plastics in the school's vicinity	1
Lack of discipline by littering plastics and loitering around	2.5
Impersistent effort on clean and green activities	2.5
Lack of guidance in the implementation of school programs in caring the environment	4
Lack of enthusiasm to join clean-up drive activities	5

Relationship of the Profile Variables, Perceived Environmental Issues, Level of Environmental Awareness, and Level of Practices of Human Values in Caring for the Environment

Table 9 examines the relationship of the environmental issues confronting the respondents and their level of practices on human values, and level of environmental awareness based on initiated activities. It can be gleaned from the table the relationship between environmental issues and respondents' human values practices. The analysis reveals no significant relationship between environmental and respondents' practices on human values, with p-values greater than 0.05. This finding can be attributed to various factors, including a lack of awareness about the connection between environmental issues and human values, the prioritization of other values or concerns, the absence of perceived personal impact, the influence of external factors such as societal norms and cultural

beliefs, and a lack of education and information on the link between environmental issues and human values.

On the other hand, the results also show that there is no significant correlation between awareness levels and respondents' environmental issues, indicating that the activities undertaken do not significantly impact their environmental awareness. The null hypothesis (H_0) is accepted. Contrary to the findings, research has shown that there is a positive relationship between scientific and environmental knowledge and pro-environmental attitudes and behaviors (Pivovarova et al., 2021). However, most past studies have concentrated on the link between environmental awareness and pro-environmental behavior, with limited focus on the relationship between environmental awareness and climate-friendly behavior (Kousar et al., 2022).

Table 9

Relationship of the Environmental Issues Confronting the Respondents and their level of Practices on Human Values, and Level of Environmental Awareness based on Initiated Activities

GROUP	PROBABILITY	DECISION	REMARKS
Environmental Issues Currently Confronting Respondents and their Level of Practices of on Human Values in Caring the Environment			
Pollution	0.46	Accept H_0	Not Significant
Overpopulation	0.51	Accept H_0	Not Significant
Waste Disposal	0.45	Accept H_0	Not Significant
Climate Change	0.32	Accept H_0	Not Significant
Global Warming	0.16	Accept H_0	Not Significant
Greenhouse Effect	0.31	Accept H_0	Not Significant
Level of Environmental Awareness based on Initiated Activities and Environmental Issues Confronting the Respondents			
Technology-Based	0.52	Accept H_0	Not Significant
Non-Technology Based	0.44	Accept H_0	Not Significant

Table 10 analyzes the relationship between the profile of the respondents and their level of environmental awareness, level of practices in caring for the environment, and level of practices on human values in caring for the environment.

In terms of the relationship between their profiles in terms of availability of gadget and average income of parents and their level of environmental awareness based on initiated activities, the results show no significant relationship between these variables, indicating that environmental awareness is not significantly influenced by these factors. The null hypothesis (H_0) is accepted, indicating no significant relationship between these variables. This means that owning gadgets or having a certain income level does not necessarily lead to higher levels of environmental awareness. This finding supports the idea that environmental awareness is influenced by other factors beyond material possessions or financial status. The study's outcome is consistent with a previous study by Bertola et al. (2021), which also found no significant relationships between environmental awareness and technology-based activities, gadget availability, and parents' income.

As to the relationship between environmental care practice as technical and non-technical practices and respondents' profile variables, including gadget availability and parents' income, the results show no significant relationship between environmental care practice and these variables, as indicated by the probability values above the significance level of 0.05. This suggests that neither gadget availability nor parents' income significantly influences environmental care practice among the respondents. This finding is consistent with Schneider et al. (2018), who found that higher-earning households, despite having more financial resources, did not significantly influence parental investments. Additionally, Patrick et al. (2013) highlighted the role of parenting styles in children's behaviors, which can be extended to environmental care practices. This suggests that parenting practices, including gadget availability, may not be significant determinants of environmental care practices among the respondents. This finding implies that promoting environmental care practices should focus on fostering personal values and attitudes towards the environment rather than solely relying on external factors like gadget availability or income. Education and awareness campaigns can be crucial in promoting environmental care practices by highlighting the importance of sustainable behaviors and encouraging individuals to develop a personal responsibility towards the environment. Additionally, parenting practices that emphasize environmental values and behaviors can positively influence children's environmental care practices.

Lastly, as to the relationship between their profile and their level of practices on human values in caring the environment, Table 10 shows that neither the availability of gadgets nor parents' income significantly influences environmental care practices among respondents. The null hypothesis (Ho) is accepted. This conclusion is consistent with the study of McCartney et al. (2007), which focuses on the importance of quality childcare in supporting the development of low-income children. The research highlights the pathways through caregiving and the home environment that contribute to children's development. While the study primarily addresses childcare, it implies that environmental care practices could be considered part of the caregiving environment, indicating that factors like gadget availability and parents' income may not be significant determinants of environmental care practices. Moreover, Ma (2022) and Prestoza (2024) also discuss the impact of family socioeconomic status on parenting styles and practices. The studies emphasize the complexity of factors influencing social class and parenting. This complexity aligns with the lack of significant influence observed between parents' income and environmental care practices in the current research, suggesting that socioeconomic status may not directly drive environmental care behaviors.

Table 10

Relationship between the Profile of the Respondents and their Level of Environmental Awareness, Level of Practices in Caring for the Environment, and Level of Practices on Human Values in Caring for the Environment

GROUP	PROBABILITY	DECISION	REMARKS
Relationship Between their Profiles and their Level of Environmental Awareness Based on Initiated Activities			
Technology-based vs. Availability of gadgets	0.44	Accept Ho	Not Significant
Technology-based vs. Average income of parents	0.39	Accept Ho	Not Significant
Nontechnology based vs. Availability of gadgets	0.3	Accept Ho	Not Significant

Nontechnology based vs. Average income of parents	0.35	Accept H ₀	Not Significant
Relationship Between their Profiles and their Level of Practice in Caring the Environment			
Technical vs. Availability of gadgets	0.24	Accept H ₀	Not Significant
Technical vs. Average income of parents	0.21	Accept H ₀	Not Significant
Nontechnical vs. Availability of gadgets	0.35	Accept H ₀	Not Significant
Nontechnical vs. Average income of parents	0.3	Accept H ₀	Not Significant
Relationship Between their Profile and their Level of Practices on Human Values in Caring the Environment			
Availability of Gadgets	0.44	Accept H ₀	Not Significant
Average Income of Parents	0.4	Accept H ₀	Not Significant

CONCLUSION AND RECOMMENDATIONS

The study stressed several critical aspects of respondents' environmental awareness and practices that they needed to demonstrate more consciousness of technological and non-technological initiatives to increase environmental awareness. Respondents identified several challenges related to miscommunication of waste separation policies and littering, emphasizing the need for targeted interventions. Interestingly, the study found no significant correlation between environmental issues faced by respondents and their level of practice regarding human values, nor between their level of environmental awareness and the issues they faced. This shows a need to recognize the broader context of social, cultural, and educational factors influencing environmental behavior to enhance environmental awareness and effectively promote sustainable practices.

With this, it is recommended that targeted intervention programs should be developed to increase environmental awareness and promote sustainable practices. These programs could incorporate social media campaigns, community outreach initiatives, and educational workshops to engage individuals and foster a sense of environmental responsibility. Strengthening school-community partnerships can also play a significant role in promoting environmental awareness among youth. Expanding instructional methods, such as incorporating real-life case studies or hands-on activities, can enhance the effectiveness of environmental education.

Since the study only assessed the level of environmental awareness, identified environmental issues, explored practiced behaviors, and examined challenges faced by students, conducting further research is recommended to broaden the scope of the study. Exploring additional variables, such as the influence of social and cultural factors on environmental behavior, can provide a more comprehensive understanding of the complexities involved. Additionally, expanding the study to include a more extensive and diverse sample would allow for a more substantial analysis and better insights into the factors influencing environmental awareness and practices leading to creating a sustainable and environmentally conscious society.

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