

Environmental Laws Awareness and Green Household Practices among Pre-service Teachers of Batangas State University-JPLPC Malvar, Philippines

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Abstract

The significance of schools and educators in fostering environmental awareness cannot be overstated. This descriptive correlational study aims to evaluate the level of awareness of environmental laws and the adoption of green household practices among pre-service teachers at a state university in the Philippines. By utilizing a modified research questionnaire and appropriate statistical analyses, the study reveals that respondents possess awareness of the environmental laws in place in the Philippines. When it comes to green household practices, respondents practiced waste management and demonstrate a high practice of resource management. Upon correlating these two variables, a significant relationship emerges, underscoring the influence of pre-service teachers' environmental law awareness on their adoption of green household practices. To further enhance environmental awareness and promote sustainable living, the study recommends the implementation of seminars or webinars that focus on imparting knowledge about green household practices and their role in fostering sustainability.

Keywords: Awareness, Practice, Environmental laws, Green household, Teacher education students

Introduction

The environment encompasses all that surrounds us, including living and non-living elements, which collectively support life on Earth. In recent years, our environment has been undergoing profound and often alarming transformations, deviating from a sustainable path. The natural world is strained, pushed to its limits by human activities and negligence. Amid these challenges, the awareness and practices of pre-service teachers hold great significance, as they are entrusted with the responsibility of imparting environmental knowledge to their students.

Education plays a crucial role in shaping attitudes and behaviors toward the environment. Therefore, educators must be well-informed about the environment and the environmental laws that govern it in the Philippines.

The practices of pre-service teachers within their households carry particular weight, as these habits directly influence their ability to instill environmental awareness in their future colleagues and students. Education coupled with action constitutes a powerful force for change in the realm of environmental consciousness. Households, as central units within communities, wield substantial influence, not only on the individuals residing within but also on government policies and decision-makers (Lane & Gorman-Murray, 2011).

Educators are tasked with the vital mission of raising environmental awareness through environmental education. As articulated in the Belgrade Charter by UNESCO (2013), the overarching goal of environmental education is to cultivate a population that not only understands and empathizes with environmental issues but also possesses the knowledge, attitudes, motivation, and dedication to take action individually and collectively, addressing current environmental challenges and preventing future ones.

The Philippines has enacted Republic Act 9512 of 2008 to advance environmental awareness through environmental education. This legislation mandates that educational institutions, organizations, and relevant agencies incorporate environmental education into their curricula at all levels, whether public or private.

A critical assessment of public policies, environmental policies, and environmental education literature reveals a pressing need for a well-informed society, given the escalating environmental issues of recent decades. Students, as future leaders, can serve as catalysts for environmental change. Environmental education has the potential to reshape the understanding and attitudes of both teachers and students. To initiate change, individuals must be well-informed about their environment, as awareness is the foundation and starting point for environmental literacy (Butcher, 2015). The current state of public environmental literacy significantly influences whether individuals are inclined to take action and participate in shaping public policies aimed at improving the environment.

However, environmental awareness alone is insufficient to ameliorate environmental degradation. Household practices must align with this awareness to effect positive change. Humans possess the capacity to either utilize natural resources to their advantage or detriment. The diversity of species benefiting from the natural environment underscores the importance of responsible resource usage. Misuse of these resources has led to the depletion of ecosystems and natural habitats, potentially harming other species. Harnessing our full potential as humans for the betterment of all species can lead to substantial benefits and a more sustainable future.

In light of these considerations, this study seeks to explore the environmental awareness and green household practices of pre-service teachers in the Philippines. By understanding

their knowledge and behaviors related to the environment, this aims to shed light on their role as future educators and advocates for sustainability. Moreover, this study is vital for the researchers, who are future science teachers, because it empowers them with the knowledge and awareness of environmental laws, enabling them to incorporate up-to-date and accurate information into their science curricula. It also emphasizes the practical application of green household practices, equipping them with firsthand experience they can share with students, fostering a culture of sustainability.

Theoretical Framework

The Theory of Planned Behavior (TPB) by Ajzen (1991) is the most appropriate theoretical framework for this study because it focuses on behavioral intentions, attitudes, subjective norms, and perceived behavioral control, all of which are central to understanding how pre-service teachers' environmental awareness and green household practices are influenced. TPB enables an in-depth examination of their intentions to engage in sustainable behaviors, their attitudes toward environmental issues, the impact of societal norms, and their perceived control over green practices. This theory's adaptability to various contexts and behaviors makes it a strong choice for investigating the complex interplay between awareness, environmental laws, and sustainable practices among pre-service teachers.

In summary, TPB enhances the depth and breadth of this research because it provides a structured framework to explore the motivations and intentions that drive pre-service teachers' actions concerning environmental awareness and green household practices. By doing so, it equips us with valuable insights that can inform strategies for promoting sustainability within educational settings and beyond.

Objectives

The purpose of this study is to determine the level of awareness on environmental laws and household practices among the teacher education students of Batangas State University JPLPC- Malvar during the academic year 2020- 2021. Specifically, the study aims to:

1. Identify the respondents' level of awareness on environmental laws;
2. Describe the respondents' green household practices in terms of:
 - 2.1 Waste Management; and
 - 2.2 Resource Management;
3. Correlate respondents' awareness on environmental laws and their household practices; and
4. Propose a webinar on sustainability.

Methodology

Research Design

This study utilized descriptive correlational research design because it allows for a thorough and systematic examination of two key aspects which are the accurate description of respondents' awareness of environmental laws and green household practices. Further, this study explored potential relationships between environmental law awareness and their green household practices. Descriptive research, as outlined by McCombes (2020), is dedicated to the precise portrayal of a population's characteristics. Additionally, the correlational aspect of the design is particularly relevant because it facilitates the measurement and investigation of relationships between variables without manipulating or controlling them.

Respondents

The participants in this research are pre-service teachers who were enrolled at Batangas State University-JPLPC Malvar during the academic year 2020-2021. Ensuring the validity and reliability of the results, the researchers aimed to obtain a representative sample through an appropriate sampling technique.

Among the total population of 507 pre-service teachers at Batangas State University JPLPC-Malvar, the researchers employed a calculated approach to determine the sample size. Utilizing Raosoft's online tool, the study aimed for a sample with a 5% margin of error and a 95% confidence level, leading to a final sample size of 219 respondents.

To ensure a proportional representation of the sample, the study employed the simple random sampling method. This involved grouping the pre-service teachers according to their respective year levels, and then randomly selecting the specified number of students to participate based on their availability. Importantly, the selection criteria for respondents were established to enhance the relevance and validity of our study. We prioritized pre-service teachers who were actively enrolled during the 2020-2021 academic year at Batangas State University-JPLPC Malvar, as they were most likely to provide accurate insights into the relationship between environmental awareness, knowledge of environmental laws, and green household practices. This methodological approach helps ensure that our findings are both meaningful and representative of the target population.

Instrumentation

The researchers utilized a modified questionnaire made by Lualhati (2019) which served as the study's main instrument. There are items that were slightly modified to better suit the target respondents. The questionnaire was validated with the help of respective individuals. After setting up the validity and the reliability of the questionnaire, the final version was administered to the target respondents. To facilitate the interpretation of the computed mean, the following mean ranges with their corresponding verbal interpretations (VI) were used: 3.51 – 4.00 – Highly Aware (HA) / Highly Practiced (HP); 2.51 – 3.50 – Aware (A)/ Practiced (P); 1.51 – 2.50 – Slightly Aware (SA)/ Slightly Practiced (SP); 1.00 – 1.50 – Not Aware (NA) / Not Practiced (NP).

Data Collection Procedure

To facilitate data collection for this research, a formal request for permission to administer the questionnaire to the pre-service teacher respondents was submitted to the office of the Dean of the College of Teacher Education. In addition to this, a consent form was presented to each respondent to ensure they had a clear understanding of the research's objectives and willingly agreed to participate. The researchers received valuable support from the university, aiding in the successful distribution and retrieval of the research instrument from the target respondents.

Once the data was collected, it was subjected to statistical analysis. Mean and Standard Deviation were employed to gain insight into the central tendency and variability of the collected data. Furthermore, the Pearson correlation coefficient (Pearson r) was used to investigate whether a statistically significant relationship existed between the level of environmental law awareness and the green household practices among the respondents.

This comprehensive approach to data collection and analysis ensures the reliability and validity of the research findings, enabling us to draw meaningful conclusions regarding the connection between environmental law awareness and sustainable household practices among pre-service teachers.

Results

1. Awareness on Environmental Laws of Pre-service Teachers

Environmental laws play an important role in protecting not just the nature as the environment, but also the humans, animals, resources, and habitats. Table 1 presents the respondents' level of awareness on environmental laws in the Philippines.

Table 1 Awareness on Environmental Laws of Pre-service Teachers

Item Statements	\bar{x}	SD	VI
<i>As a student I know that...</i>			
1. Philippine Clean Water Act of 2004 applies to the water quality management in all water bodies.	3.44	0.59	A
2. Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990 restricts the importation, processing, sale, distribution, use, and disposal of chemical substances and mixture.	3.25	0.67	A
3. Environmental Protection Act of 1990 empowers local authorities to deal with noise constituting a statutory nuisance.	3.21	0.66	A
4. Philippine Mining Act of 1995 regulates the utilization of mineral resources in the country.	3.35	0.68	A
5. Philippine Code of Sanitation requires food establishments in cities and municipalities to create a collection and disposal system.	3.47	0.64	A
6. The Garbage Law of 1995 prohibits littering in public places.	3.42	0.68	A
7. Philippine Ecological Solid Waste Management act of 2000 encourages people to discipline themselves on proper waste disposal.	3.46	0.67	A
8. P.D. 705, known as the Forestry Reform Code of the Philippines, emphasizes the protection, development, and rehabilitation of forest lands.	3.42	0.65	A
9. Philippine Clean Air Act of 1999 promotes and protects the global environment to attain sustainable development.	3.46	0.60	A
10. Local Government Code of 1991 provides responsibilities to the local government of their waste management programs.	3.31	0.67	A
Overall	3.38	0.65	A

The data in the table reflects the agreement among pre-service teachers, with an overarching mean score of 3.38. This suggests that the respondents possess a commendable level of awareness of the Philippine Code of Sanitation. They recognize the existence of environmental policies designed to ensure proper sanitation, particularly concerning the collection and disposal of waste in food establishments. This heightened awareness is pivotal, as it fosters a cleaner and more sustainable environment.

Despite scoring the lowest mean of 3.21, the respondents also express agreement with the Environmental Protection Act of 1990, which grants local authorities the power to address noise issues that constitute a statutory nuisance. This indicates that the respondents are cognizant of the policies in place to mitigate noise pollution, which can be disruptive and detrimental to human well-being.

Overall, the respondents' agreement with all the item statements underscores their awareness of the environmental laws and policies enforced in the Philippines. As Butcher

(2015) has emphasized, such environmental consciousness forms the bedrock of literacy and understanding. This heightened awareness among pre-service teachers holds promise for future generations, as they will play a pivotal role in imparting knowledge about environmental laws and policies to their students, thereby fostering a culture of environmental responsibility (Tekin, 2010).

As per Das et al. (2010), environmental awareness encompasses a broad spectrum of knowledge, including a deep understanding of the environment, values, and the necessary skills to address environmental challenges. Being environmentally aware serves as the initial step toward nurturing responsible citizenship behavior over the long term.

In the Philippines, several key educational institutions, such as the Department of Education (DepEd), Commission on Higher Education (CHED), Technical Education and Skills Development Authority (TESDA), in collaboration with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST), and other relevant agencies, are actively engaged in spearheading educational and awareness programs. This concerted effort aims to educate a vast majority of institutions on environmental protection and conservation, as mandated by Rabiatul et al. (2018). The primary objective of this program is to equip students with knowledge and awareness, ultimately producing a more environmentally conscious populace. It is important to acknowledge that people's awareness is a potent tool in the realm of environmental conservation, as highlighted by Gonzales et al. (2015). The acquisition of information over the years of education can indeed be a catalyst for behavioral change.

2. Green Household Practices of Pre-service Teachers

Green household practices are the act of preserving the environment through various household activities. Tables 2 and 3 show the green household practices of pre-service teachers in terms of waste management and resource management.

Table 2 Green Household Practices of Pre-service Teachers in terms of Waste Management

Item Statements	\bar{x}	SD	VI
<i>As a student I ...</i>			
1. segregate garbage.	3.42	0.63	P
2. use reusable utensils when there are occasions.	3.40	0.74	P
3. pay bills online.	2.66	0.96	P
4. dispose hazardous wastes properly.	3.58	0.62	HP
5. make sure that wastewater will not flow to fresh water source.	3.66	0.53	HP
6. use jars or other glass containers to store foods.	3.61	0.64	HP
7. use cloth napkins in the kitchen.	3.35	0.80	P
8. repair items first before buying a new one.	3.67	0.52	HP
9. use own bags or reusable bags when shopping.	3.72	0.52	HP
10. repurpose household trash.	3.30	0.66	P
Overall	3.44	0.66	P

Within the realm of waste management, the data highlights a positive trend. Half of the item statements demonstrate a consistent practice, with the highest mean of 3.72, indicating that respondents actively employ sustainable waste management strategies. One notable practice is the frequent use of personal and/or reusable bags when shopping, reflecting a strong

commitment to reducing waste. Bogner et al. (2020) underscore the critical importance of effective waste management in achieving sustainability. Its core objective is to curtail the volume of non-reusable materials and mitigate potential health and environmental risks. The respondents' commitment to these practices aligns with this sustainability agenda.

Despite the slightly lower mean score of 3.30, the respondents still engage in sustainable waste management by repurposing household waste, especially items like paper, glass, and metal, which are commonly recycled or handed over to recycling centers (Barloa et al., 2016). As future educators, the respondents bear the potential to be influential figures in promoting waste management. Labog (2017) highlights the significance of integrating waste management into the classroom environment, as consistent reminders can shape students' waste management habits, extending to their households. Notably, the respondents exhibit a broad spectrum of waste management practices, with an overall mean of 3.44. Thus, it is vital for them to sustain and further enhance these practices to continue contributing to a greener future.

Further, the data underscores that every individual can play a role in shaping a more environmentally friendly future by minimizing waste generation and actively participating in recycling or reusing efforts (Lualhati, 2019).

Table 3 Green Household Practices of Pre-service Teachers in terms of Resource Management

Item Statements	\bar{x}	SD	VI
<i>As a student I ...</i>			
Turn off the lights if not in use.	3.85	0.45	HP
Use rainwater for cleaning and for watering plants.	3.34	0.82	P
Keep electric fan or air conditioner on during day and off at night.	2.99	0.87	P
Fix faucets if there are leaks.	3.54	0.70	HP
Use scratched papers instead of new ones.	3.63	0.58	HP
Unplug appliances when not in use.	3.76	0.54	HP
Use glass instead of running water while brushing my teeth.	3.58	0.73	HP
Check if the faucet is completely off before I leave the bathroom.	3.84	0.43	HP
Use automatic washing machine for full loads only.	3.15	0.92	P
Turn off the breaker when in vacation.	3.66	0.66	HP
Overall	3.44	0.66	HP

The table provides insights into the respondents' green household practices, specifically in the domain of resource management. Impressively, more than half of the item statements indicate a consistent commitment to green household practices in resource management, with the highest mean of 3.85. This signifies that the respondents diligently adhere to practices like turning off lights when not in use, a fundamental and sustainable approach to resource management. Lualhati's (2019) study underlines the paramount importance of instilling environmental awareness and education in younger generations. This education is an essential step in nurturing responsible citizens who will assume the mantle of nature and resource conservation and preservation.

Even though they scored the lowest mean of 2.99, the respondents still play a role in sustainable resource management by adopting a specific practice: keeping electric fans and air conditioners on during the day and switching them off at night. Norshariani et al. (2018) stress the significance of recognizing and understanding local resources, a crucial element in their efficient administration, preservation, and conservation.

In general, the respondents consistently engage in resource management practices, culminating in an overall mean score of 3.53. Their dedication to these resource management behaviors demonstrates their proactive role in safeguarding and utilizing resources judiciously for a more sustainable future.

3. Relationship between the Respondents' Level of Awareness on Environmental Laws and Green Household Practices of Pre-service Teachers

Table 4 presents the relationship between the respondents' level of awareness on environmental laws and green household practices. The correlation of the variables was tested using the Pearson r formula.

Table 4 Relationship between the Respondents' Level of Awareness on Environmental Laws and Their Green Household Practices

Variables	Computed r	Verbal Interpretation	p value	Decision H_0	Interpretation
Awareness on Environmental Laws and Green Household Practices in terms of Waste Management	0.506	Moderate Positive Relationship	0.000	Reject	Significant
Awareness on Environmental Laws and Green Household Practices in terms of Resource Management	0.506	Moderate Positive Relationship	0.000	Reject	Significant

The findings bring to light a compelling connection between the awareness of environmental laws and the adoption of sustainable household practices among pre-service teachers, as demonstrated by the study conducted by Sebastian et al. in 2021. Whether it pertains to waste management or resource utilization, individuals who elevate their understanding of environmental laws tend to exhibit a greater tendency for responsible and eco-conscious behaviors within their homes, echoing the views of Suzana et al. in 2020. These results underscore the influential role of education and awareness in nurturing environmentally responsible behaviors and emphasize the potential for informed individuals to make substantial contributions to environmental conservation through everyday household actions.

The calculated correlation coefficient (r) of 0.506 uncovers a moderate, yet meaningful, positive association between respondents' environmental law awareness and their green household practices in waste management, as highlighted by Rabiatal et al. in 2018. This means that as individuals' awareness of environmental laws increases, their commitment to responsible waste management in their households tends to follow, aligning with the insights provided by Shyang-Chyuan (2018). Importantly, the p-value remains notably lower than the chosen significance level (α), denoting a strong statistical significance. This p-value gives a strong basis to confidently reject the null hypothesis (H_0), which initially posited no significant relationship between environmental law awareness and green household waste management practices.

Similarly, in a parallel manner to the findings in waste management, the computed correlation coefficient (r) of 0.506 reveals a moderate positive relationship between respondents' environmental law awareness and their green household practices related to resource

management. Once again, the p-value remains below the chosen significance level (α), underlining substantial statistical significance. In congruence with the case of waste management, this study rejects the null hypothesis (H_0) for resource management, reinforcing the assertion of a substantial relationship between environmental law awareness and green household resource management practices. These results substantiate the essential role that awareness of environmental laws plays in steering individuals towards more eco-conscious actions within their households.

4. Proposed Webinar on Sustainability

The proposed webinar on sustainability, reflected on Table 5, is a carefully designed initiative with the primary objective of fostering a culture of environmental responsibility among pre-service teachers. Through a series of well-structured activities, this webinar aims to equip participants with a deep understanding of sustainability principles and practical strategies for implementing green household practices.

Table 5 Proposed Webinar on Sustainability

Activity	Duration	Description
Webinar Launch and Introduction	15 minutes	Welcome and introduction of speakers and participants. Overview of the webinar's objectives and agenda.
Session 1: Understanding Sustainability	30 minutes	Presentation on the concept of sustainability, its importance, and its relevance in daily life. Discuss the environmental challenges and individuals' roles in addressing them.
Session 2: Sustainable Household Practices	45 minutes	In-depth exploration of sustainable practices within households, including waste reduction, energy conservation, water efficiency, and resource management. Real-life examples and success stories.
Session 3: Practical Strategies	30 minutes	Interactive session for participants to share their current practices and sustainability challenges. Facilitated discussion on practical strategies and solutions.
Session 4: Policy and Advocacy	15 minutes	Discussion on the role of policy and advocacy in promoting sustainable practices. Emphasize pre-service teachers becoming advocates for sustainability.
Session 5: Q&A and Panel Discussion	20 minutes	Open the floor for questions from participants. Panel discussion with sustainability experts and experienced educators.
Session 6: Action Planning	20 minutes	Breakout groups for pre-service teachers to create individualized action plans. Share and discuss action plans within the groups.
Session 7: Closing Remarks and Pledge	15 minutes	Summarize key takeaways from the webinar. Invite participants, especially pre-service teachers, to make a sustainability pledge.
Follow-up Resources	Ongoing	Provide access to a resource hub with articles, videos, and tools related to sustainable living. Establish an online community for ongoing support and sharing of experiences.
Post-Webinar Evaluation	1 week after	Send out a post-webinar survey to gather feedback and assess the impact of the webinar. Use feedback to refine future sustainability initiatives and webinars.

The outlined webinar agenda presents a well-structured and comprehensive approach to addressing sustainability, particularly in the context of household practices and education for pre-service teachers. It offers a balanced mix of informative sessions on sustainability fundamentals, practical strategies, and policy advocacy, ensuring participants have a holistic understanding of the subject. The interactive elements, including the Q&A, panel discussion, and action planning, encourage active engagement and knowledge application. Moreover, the post-webinar evaluation and ongoing resources demonstrate a commitment to continuous improvement and long-term support, enhancing the webinar's potential to inspire lasting change and environmental stewardship. This well-designed event has the capacity to leave a meaningful impact on participants' attitudes and behaviors towards sustainability.

Discussions

Majority of pre-service teachers exhibit a commendable awareness of the environmental laws implemented in the Philippines. Notably, both waste management and resource management practices are embraced by these individuals. However, it's noteworthy that resource management is more highly practiced compared to waste management, which can be characterized as moderately practiced.

Importantly, a significant correlation emerges between pre-service teachers' awareness of environmental laws and their green household practices. This connection underscores the importance of educating individuals about environmental policies and fostering their personal commitment to sustainable living.

In light of these findings, the researchers propose a webinar aimed at enhancing green household practices among pre-service teachers. The focus of this webinar will be on disseminating knowledge about environmental laws and policies, empowering individuals to make informed and sustainable choices in their daily lives. Additionally, the researchers recommend follow-up workshops to further refine and improve the green household practices of the respondents, offering a platform for practical, hands-on learning and skill development in the realm of sustainability. This multi-pronged approach ensures a comprehensive strategy for promoting eco-conscious behavior among pre-service teachers, fostering a positive impact on their households and communities.

Conclusion and suggestions

In light of the study's findings and conclusions, several recommendations emerge. The institution may consider establishing an online page through a Facebook page or a website. This platform could serve as a hub for sharing regular updates, trivia, and valuable information related to environmental laws and policies. Such efforts could effectively motivate and remind students to actively engage in practices promoting environmental sustainability. Furthermore, the institution may organize an educational event comprising a series of activities focused on enhancing participants' knowledge of environmental laws and their role in sustainable living. This event could encompass webinars and workshops, providing a hands-on and immersive learning experience.

To foster a practical connection to environmental sustainability, the school organization may propose an environmental science fair. This fair could encourage students to create

projects utilizing recyclable materials, offering innovative solutions for environmental preservation. In addition, incorporating environmental protection into orientation programs, with an emphasis on resource and energy management, can serve as an essential step in integrating sustainability into the institutional culture.

Regular assessments in the form of yearly practical examinations can be implemented to gauge students' awareness of environmental laws and green household practices. These assessments help identify areas that may require further development and refinement.

For future research endeavors, researchers might consider conducting similar studies aimed at measuring and determining the level of environmental laws awareness and green household practices among teachers, or a combined study involving both students and teachers. This comparative approach could yield valuable insights into the differences and commonalities between these two groups in terms of their knowledge and implementation of environmental laws and green household practices.

New knowledge and the effects on society and communities

The study highlights the level of environmental awareness among pre-service teachers, offering the potential to create a more informed and environmentally conscious society. The significant relationship identified between environmental law awareness and green household practices emphasizes the role of education in driving sustainable behaviors, impacting households and communities. The study's recommendation for educational seminars or webinars focusing on green household practices provides a practical means to translate knowledge into action, benefiting both pre-service teachers and interested community members.

Moreover, the findings may have policy implications, influencing the development and enforcement of eco-friendly policies at various levels, ultimately contributing to a more environmentally responsible society. Finally, this study opens doors for further research in the field of environmental education and sustainability, offering opportunities to explore different approaches, interventions, and demographic groups for a broader societal impact.

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