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Fostering Ecological Literacy and Solid Waste Management Practices among Students and Employees: A Pathway to Green Campus Development

Christine B. Diocos, PhD; Lilibeth B. Petrescu, MBM

Iloilo State University of Fisheries Science and Technology, Tiwi, Barotac Nuevo, Iloilo, Philippines
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A B S T R A C T

This descriptive-correlational research examined the ecological literacy and solid waste management practices of students and employees in terms of the areas of segregation, reduction, reuse, recycling, and disposal. The study's respondents were randomly selected students and employees during the academic year 2023 at the Iloilo State University of Fisheries Science and Technology, a state university in the Province of Iloilo, Philippines. The modified Ecological Literacy Checklist from Abao et al. (2019) was used to determine the respondents' ecological literacy level, and the Solid Waste Management Practices Questionnaire, which dealt with solid waste management practices in terms of segregation, reduction, reuse, recycling, and disposal. The study revealed that students and employees have above-average ecological literacy. They often practiced segregation, reduction, reuse, recycling, and disposal. Correlation analysis revealed that students' ecological literacy significantly correlates with solid waste management practices such as segregation, reduction, reuse, recycling, and disposal. Strengthening ecological literacy in students and employees is vital for a sustainable future. Improvement of solid waste management at the school level requires a focus on waste reduction for students and recycling for employees.

Keywords: waste segregation, waste reduction, re-use, recycling, environmental stewardship, sustainable practices

1. Introduction

Environmental analysts express increasing concern regarding the trajectory of global waste production. In 2020, global solid waste generation reached an estimated 2.24 billion tons, translating to a per capita footprint of 0.79 kilograms daily. Projections based on current population growth trends and urbanization suggest a further 73% increase in annual waste production, surpassing 3.88 billion tons by 2050 (World Bank, 2022). The absence of urgent intervention will result in a 70% increase in global waste generation by 2050, exceeding current levels, as projected by the World Bank's "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050" report (Kaza et al., 2018). The "What a Waste 2.0" report emphasizes the crucial role of effective solid waste management in fostering sustainable, healthy, and inclusive communities, recognizing its frequent neglect, particularly in low-income nations. While high-income countries achieve waste recovery exceeding one-third through recycling and composting, this figure plummets to a mere 4% in low-income countries. Unsurprisingly, the Philippines generates more solid waste as the population increases, living standards are enhanced, and urban and rural areas are being developed. According to a report by the Senate Economic Planning Office (SEPO), the country's waste generation steadily increased from 37,427.46 tons per day in 2012 to 40,087.45 tons in 2016. Meanwhile, solid wastes produced by Philippine cities are expected to increase by 165 percent to 77,776 tons by 2025. Residential areas have the most amount of solid waste at 57 percent. In contrast, wastes from commercial establishments, institutional sources, and industrial or manufacturing sectors accounted for 27 percent, 12 percent, and 4 percent of the total waste generated, respectively (Mawis, 2022). Recognizing the critical role of education in fostering environmental awareness, Republic Act 9512 (2008) mandates an inter-agency approach. Under this directive, the Department of Education (DepEd), the Commission on Higher Education (CHED), the Technical Education and Skills Development Authority (TESDA), and the Department of Social Welfare and Development (DSWD) are tasked with collaborating with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST), and other relevant organizations to seamlessly integrate environmental education into the curricula of all educational levels, encompassing both public and private institutions, including barangay daycare centers, preschools, non-formal programs, technical and vocational training, professional courses, indigenous learning initiatives, and out-of-school youth programs. Environmental education equips individuals with the knowledge and skills to make informed choices and take meaningful actions to protect and improve the environment for themselves and future generations. This includes understanding environmental concepts, local challenges and solutions, the impact of individual behavior, and the values of conservation, protection, and responsible resource management. The Ecological Solid Waste Management Act of 2000 (RA 9003) defines solid waste management as "the discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes. It provides the legal basis for establishing solid waste management (SWM) plans and sets the guidelines for solid waste-related activities such as collection, transport, and

disposal. Strengthening the integration of ecological waste management and resource recovery in formal and non-formal education is crucial for empowering citizens to take environmental action. In coordination with government agencies such as DECS, TESDA, CHED, DILG, and PIA, the Commission shall conduct a continuing education and information campaign on solid waste management. Such education and information programs shall aim to develop public awareness of the ill effects of and the community-based solutions to the solid waste problem (RA 9003, 2001). Solid waste management in educational institutions can informally train students to practice good solid waste management approaches and take this experience back to their homes. Therefore, surrounding communities can quickly adopt successful policies and practices (Armijo de Vega et al., 2008). Education is vital in achieving sustainability, and ecological literacy is an element of education for sustainable development. Adawiah and Esa (2013) define ecological literacy as understanding the natural system related to our lives. It is a way of thinking about the world regarding interactions within natural systems, including considering the consequences of human actions. Ecological literacy equips students with the knowledge and competencies necessary to address the solution of environmental issues in an integrated way. Higher Education Institutions should be able to become agents who can change people's mindsets to have environmental awareness, particularly in creating prospective educators with eco-literacy levels and global insight (Muliana et al., 2018). Every educational institution is mandated by law to educate the public on the theories and practices of solid waste management. To achieve effective and sustainable implementation of the proper waste management practices, awareness and participation are the keys to being involved in an institution's Solid Waste Management Program (Paghasain, 2017). There is an urgent need to develop every learner, especially future teachers, a heightened knowledge and understanding of environmental concerns. Today's students represent those future generations, making it essential for us, as educators, to help them realize the significance of caring for and nurturing the environment. The study can contribute to SDG 4 by helping to develop educational programs and resources that promote ecological literacy and sustainable practices among students and employees. This can be done by incorporating environmental education into the curriculum, providing opportunities for experiential learning, and raising awareness of the importance of sustainable living. The study is aligned to SDG 11 by promoting sustainable practices on university campuses. This can be done by reducing waste production, conserving resources, and promoting energy efficiency. The study can also help to develop a green campus development plan that outlines specific initiatives to improve the sustainability of the campus environment. Based on these, the authors are interested in analyzing the eco-literacy level and identifying solid waste management practices of students and employees at Iloilo State University of Fisheries Science and Technology to help create a learning environment that fosters environmental stewardship, promotes sustainable practices, and contributes to a healthier planet.

1.1 Statement of the Problem

This study examined students' and employees' ecological literacy and solid waste management practices.

Specifically, it sought to answer the following questions:

1. What is the level of ecological literacy of students and employees?

2. What are the practices of solid waste management in terms of segregation, reduction, reuse, recycling, and disposal of students and employees?

3. Is there a significant relationship between the level of ecological literacy and practices on solid waste management of students and employees?

1.2 Theoretical Framework

This study was anchored on the works promoted by the environmental educator David W. Orr (1992) and the physicist Fritjof Capra (1995); nurturing ecological literacy in students of a wide range of ages has become the goal of sustainability education programs worldwide. When applied to the specific context of solid waste management, the framework of environmental literacy, as defined by Hungerford and Peyton (1980), emphasizes the significance of not just knowledge acquisition about managing waste responsibly, but also the development of positive attitudes and a willingness to translate those attitudes into actual sustainable practices.

2. Review of Related Literature

2.1 Ecological Literacy

Desfandi et al. (2017) stressed that eco-literacy is vital for each individual. The term eco-literacy measures one's ecological knowledge and ability and willingness to apply this knowledge for a continuous lifestyle (Monaghan & Curthoys, 2008). Beyond understanding ecological principles, Meena and Alison (2009) argued that true eco-literacy is also about recognizing and appreciating the interconnectedness with all living things. The study of Teksoz et al. (2010) revealed that pre-service chemistry teachers strongly emphasized the promotion of feelings of concern for the environment, the development of awareness and sensitivity to the total environment, and gaining social values to protect natural resources through teaching environmental issues. The results also showed that participants had favorable attitudes toward the environment and feelings of personal responsibility to create a better environment. However, pre-service chemistry teachers needed to understand environmental issues soundly. Although they needed more necessary subject matter knowledge, they were willing to integrate environmental issues into their teaching practice. Environmental education is critical to increasing the eco-literacy level, particularly the knowledge aspect, and environment education is needed to achieve eco-literacy (Barnes, 2013). The findings of the study showed that integrating the principle of sustainability into the curriculum can enhance students' eco-literacy levels (Bevins & Wilkinson, 2009).

2.2 Solid Waste Management

Solid waste is the useless, unwanted, and discarded material resulting from day-to-day activities in the community. Solid waste management may be defined as the discipline associated with controlling solid waste generation, storage, collection, transfer, processing, and disposal (Mishra et al., 2013).

Solid waste management reduces or eliminates adverse impacts on the environment and human health and supports economic development and improved quality of life. Several processes are involved in effectively managing solid wastes in a human society. These include monitoring, collection, transport, processing, recycling and disposal. A study by Desa et al. (2012) that assessed the attitudes, behavior, and practices towards the solid waste management of first-year students from UKM, Bangi Campus, showed that students have a high level of behavior and practices regarding the solid waste management program. However, the researchers noted that waste education and awareness strategies are still needed to develop more students' awareness and attitude toward managing solid waste to reduce the impact of the waste problem on the campus. Waste management is needed to reduce or mitigate the mounting global crisis on waste, which endangers humanity, pollutes the environment, and damages communities. In particular, solid waste management is "a form of waste control, often associated with storage, collection, transport, process, and disposal of solid waste following quality standard of conservation, public health, engineering, economics, and other environmental concerns" (Rahmaddin et al., 2015). Paghasian's (2017) study revealed that college students in Maigo have a high level of awareness of solid waste management. Their solid waste management practices in terms of segregation, reduction, and recycling were good, while their practices in terms of recycling and disposal were fair. The students' awareness of solid waste management did not influence their practices in disposal; however, it affected their practices, specifically on segregation, reduction, reusing, and recycling. In addition, the study of Molina and Catan (2021) also shows that students have good solid waste management practices in terms of segregation, reduction, reuse, recycling, and disposal. The extent of solid waste management practices among college students from different state universities and colleges in CALABARZON was determined by Gequinto (2016). The results revealed that waste collection got the highest composite mean, particularly on the promotion of the 3Rs (reduce, reuse, recycle), while waste recycling and waste treatment obtained the lowest composite mean. The students also have good practices in solid waste management in terms of properly disposing of, recycling, and reusing but moderately practice proper segregation and reduction, as revealed in the study of Bautista (2019). Results of the inferential statistics revealed that the students' awareness level influenced their practices on proper segregation, reduction, and recycling but had no influence on their practices on solid waste management in terms of reuse and disposal.

2.3 Green Campus

The so-called Green School or the Green University, is the modern education that seeks sustainable development, keeping abreast of technological development and benefiting from it in all other elements of the educational process with high efficiency and outstanding products according to environmentally friendly standards (Velazquez et al., 2006). It is developing two parts: the section related to environmental programs of buildings, energy, forestry, and services. This aspect is clearly found in many countries, both developed and developing, and in universities in Arab countries, and it has been in operation for several years (Ng et al., 2019). The other part is all that focuses on the educational process with the techniques, applications, strategies, and practices associated with the concept of green education, and many countries have started to adopt it in their institutions and educational systems (Grindsted, 2011).

3. Methodology

This study utilized the descriptive-correlational research method. Descriptive is in the sense that information is collected from a group of people to describe some aspects or characteristics of the population of which that group is a part (Fraenkel & Wallen, 2003). The correlation research method was used to determine the direction and extent of the relationship between variables of the population under study (Yanson et al., 2019). It is establishing the relationship among students' and employees' ecological literacy and solid waste management practices.

The study's respondents were 105 students and 40 employees randomly selected during the academic year 2023 at the Iloilo State University of Fisheries Science and Technology, a state university in the Province of Iloilo, Philippines.

The modified Ecological Literacy Checklist from Abao et al. (2019) was used to determine the respondents' ecological literacy level. The responses to each item were summed up, and the mean score was computed. To determine the level of ecological literacy, the following scale of means and their description were utilized:

Mean Score	Descriptive
3.40 – 4.00	Excellent
2.80 – 3.39	Above Average
2.20 – 2.79	Average
1.60 – 2.19	Below Average
1.00 – 1.59	Poor

The Solid Waste Management Practices Questionnaire was a researcher-made questionnaire that dealt with solid waste management practices in terms of segregation, reduction, reuse, recycling, and disposal. The questionnaire has undergone validation and reliability testing. Science teachers validated the questionnaire for content validation. Cronbach alpha was used to determine the reliability of the questionnaire. The following scale of means and their description will be utilized to determine the solid waste management practices of the respondents:

Mean Score	Descriptive
3.40 – 4.00	Always
2.80 – 3.39	Often
2.20 – 2.79	Sometimes
1.60 – 2.19	Seldom
1.00 – 1.59	Never

The reliability coefficients of the instruments were .874 for the modified Ecological Literacy Checklist and .849 for the Solid Waste Management Practices Questionnaire, which indicates that the instruments were reliable.

After getting permission, the questionnaire was personally fielded to the respondents so that the nature and objectives of the study were explained. In the conduct of the study, ethical issues were given utmost consideration. All data collected was kept confidential. The data gathered was tallied, recorded, and analyzed using appropriate statistical tools.

4. Results and Discussions

Ecological Literacy

The results of the study revealed that students (M = 3.06) and employees (M = 3.31) have above-average ecological literacy. This means that they understand nature well and the systems that make life possible, including how these systems work and how all living things are interdependent. They also believe that all living things must be respected, and that the environment needs to be protected. As a result, they make environment-friendly choices and take environment-friendly actions.

The study also found that students and employees agree that education is instrumental in addressing environmental issues and that all teachers are responsible for educating students about these issues.

Table 1. Level of Ecological Literacy of the Respondents.

ITEMS		Students		Employees	
		Mean	Description	Mean	Description
1.	I understand the relationship of all living things and their environment.	3.13	Above Average	3.35	Above Average
2.	I believe we are dependent on nature.	3.23	Above Average	3.44	Excellent
3.	Our environment has nothing to do with our physical well-being.	1.92	Low	1.62	Low
4.	We vary on the extent to which we learn about our environment.	3.03	Above Average	3.09	Above Average
5.	I understand the impact of human activity and development on the environment.	3.06	Above Average	3.59	Excellent
6.	Education for sustainable development has been fully understood.	2.44	Average	2.76	Average
7.	All living things must be afforded with respect.	3.67	Excellent	3.76	Excellent
8.	I understand the environmental impact brought about by technologies.	3.08	Above Average	3.32	Above Average
9.	I understand the environmental impact of human decisions and actions.	3.26	Above Average	3.56	Excellent
10.	I am conscious of reducing use of energy and	2.77	Average	3.26	Above Average

	resources both in schools and at home.				
11.	I can share information about biodiversity.	2.90	Above Average	3.29	Above Average
12.	I believe that education is instrumental in addressing environmental issues.	3.30	Above Average	3.38	Above Average
13.	We act on environmental issues that are personally relevant to us.	2.95	Above Average	3.24	Above Average
14.	All teachers must teach about environmental issues.	3.29	Above Average	3.53	Excellent
15.	Respect for all people lessens environmental problems.	3.08	Above Average	3.15	Above Average
16.	A green school is feasible.	3.02	Above Average	3.50	Excellent
17.	I understand society's impact on the natural world	3.00	Above Average	3.32	Above Average
18.	I analyze environmental issues	3.04	Above Average	3.24	Above Average
19.	I am curios and compassionate with Nature	3.25	Above Average	3.32	Above Average
20.	I believe that there can be no life without earth and its natural systems	3.53	Excellent	3.79	Excellent
21.	I take environment-friendly actions	2.76	Average	3.35	Above Average
22.	I make environment-friendly choices	2.78	Average	3.26	Above Average
23.	I strongly feel about protecting the environment	3.40	Excellent	3.50	Excellent
24.	I engage in clean-up drives/ programs.	3.10	Above Average	3.29	Above Average
25.	I have deep concern, even love, for the well-being of the Earth and all living things.	3.52	Excellent	3.62	Excellent
Mean		3.06	Above Average	3.31	Above Average

Solid Waste Management Practices

Republic Act No. 9003 (2001), also known as the Ecological Solid Waste Management Act of 2000, requires all local government units (LGUs) to implement a solid waste management program that includes segregation and collection of solid waste at the source. The law also requires that solid waste containers be appropriately marked or identified for on-site collection as "compostable," "non-recyclable," "recyclable," or "special waste."

Students and employees at our university practice segregation of waste more often (M = 3.07 and 3.27, respectively). This means that they regularly separate different materials found in solid waste to promote recycling and reuse of resources and reduce the volume of waste. Students and employees always segregate biodegradable from non-biodegradable waste. However, the separation of e-waste is sometimes practiced by students but is more often done by employees.

Waste reduction, or source reduction, prevents waste by decreasing or eliminating the materials initially used. It is essential because it reduces the amount of solid waste generated, reduces the need for collection and disposal, and saves money.

Data shows that students and employees often practice waste reduction (M = 2.90 and M = 3.15, respectively). This indicates that they have good practices in terms of solid waste reduction. Some standard waste reduction practices among students and employees include using eco bags/cloth bags in place of plastic or paper bags, using reusable water bottles, containers, and serving utensils instead of disposable items, purchasing in bulk quantities, and choosing items that are made from recycled products and those that are packaged in recycled cartons.

Reuse refers to recovering materials intended for the same or a different purpose without altering their physical or chemical characteristics (RA 9003, 2001). It is the action or practice of using a material again in its current form, whether for the same purpose or for a different function. The goal of reuse is to conserve some or all of the energy and raw materials used to manufacture a new item.

Students and employees at ISUFST have good management practices in terms of reuse. This is shown by the results, which indicate that employees always practice reuse (M = 3.40) and students often practice reuse (M = 3.11). Common reuse practices among students and employees include donating used household items like books, magazines, clothing, and kitchenware, washing and using empty plastic food containers to store leftovers, reusing plastic or cotton bags for shopping, reusing items for a different purpose than originally intended, such as using old jars to store food or old clothes to make cleaning rags and fixing items rather than throwing them away.

Recycling is a vital part of waste management, according to Rodrigues (2022). It is the process of recovering used materials and turning them into new products, which helps to reduce pollution, conserve resources, and save energy. The results of this study revealed that students (M = 3.09) and employees (M = 3.00) often practice solid waste management practices in terms of recycling. Some specific examples of recycling practices include Creating art crafts from plastic, rubber, glass, beverage containers, and other waste materials to decorate classrooms, Providing recycle bins for plastic, paper, and cans, using decomposed food waste such as fruits, vegetables, coffee grounds, and egg shells as fertilizer and sometimes practicing greywater recycling. The results of this study suggest that students and employees at this university are aware of the importance of recycling and are taking steps to practice it. However, there is still room for improvement, as some recycling practices, such as greywater recycling, are only sometimes practiced.

Students and employees (M = 2.81 and 3.27, respectively) practice good disposal management of solid waste. For example, students often compost organic materials such as leaves and grass clippings instead of burning them. They seldom burn waste materials, and they never throw garbage anywhere.

Table 2. Solid Waste Management Practices of the Respondents

ITEMS	Students		Employees	
	Mean	Description	Mean	Description
SEGREGATION				
Segregate biodegradable from non-biodegradable	3.15	Often	3.32	Often
Segregate non-biodegradable waste into recyclable waste and toxic waste	3.15	Often	3.29	Often
Properly labeling of waste bins/ trash cans for different kinds of wastes	3.16	Often	3.00	Often
Separation of e-wastes	2.60	Sometimes	3.23	Often
Separation of wastes for composting	3.46	Always	3.50	Always
Mean	3.07	Often	3.27	Often
REDUCE				
Using both sides of every paper	2.55	Sometimes	3.18	Often
Bring water in a reusable water bottle.	3.19	Often	3.26	Often
Pack lunch in a reusable container and use reusable spoons and fork.	2.99	Often	3.24	Often
Use ecobags/ cloth bags.	2.79	Sometimes	3.09	Often
Buy items that are packaged in recycled materials.	2.99	Often	3.00	Often
Mean	2.90	Often	3.15	Often
REUSE				
Reuse items for a different purpose than originally intended	3.16	Often	3.32	Often
Try to fix an item rather than throwing it away, or see if someone else can fix it for you.	2.96	Often	3.53	Always
Wash and reuse plastic containers.	3.13	Often	3.47	Always
Use reusable plastic bags or cotton bags for shopping/ marketing.	3.04	Often	3.18	Often
Donate household items like books, magazines, clothing, kitchen wares, etc.	3.40	Always	3.50	Always
Mean	3.11	Often	3.40	Always
RECYCLE				
Keep a recycling bin or bag in school to place plastic, paper, and	3.41	Always	3.15	Often

cans.				
Create art crafts	3.39	Often	2.91	Often
Use products made from recycled material	3.04	Often	3.15	Often
Use organic compost as fertilizer	3.18	Often	3.18	Often
Recycle grey-water.	2.46	Sometimes	2.62	Sometimes
Mean	3.09	Often	3.0	Often
DISPOSAL				
21. Allow organic materials such as leaves and grass clippings to decay for future use.	3.07	Often	3.18	Often
22. Burn waste materials.	1.89	Seldom	1.61	Seldom
23. Throw garbage anywhere.	1.53	Never	1.41	Never
24. Selling non-biodegradable materials	2.11	Seldom	2.82	Seldom
25. Storing for garbage collection and disposal in the municipal dump site	2.32	Sometimes	3.35	Often
Mean	2.81	Often	3.27	Often

Relationships Between Ecological Literacy and Solid Waste Management Practices

Correlation analysis revealed that students' and employees' ecological literacy significantly correlates with solid waste management practices such as segregation, reduction, reuse, recycling, and disposal. The correlations are positive and moderate, with correlation coefficients of .417, .347, .477, .360, and .189, respectively. This indicates that respondents with higher levels of ecological literacy are more likely to practice good solid waste management.

Students with higher levels of ecological literacy are more likely to practice good solid waste management. This suggests that universities should invest in environmental education programs to help students develop the knowledge and skills they need to make sustainable choices. Employees with higher levels of ecological literacy are more likely to practice good solid waste management in the workplace. This suggests that universities should provide training on environmental sustainability for all employees.

Overall, the findings of the correlation analysis suggest that ecological literacy is an important factor in promoting good solid waste management practices. Universities can play a significant role in improving the ecological literacy of their students and employees and in implementing other sustainability initiatives.

Table 3. Relationships between Ecological Literacy and Solid Waste Management Practices

SWM Practices	Ecological Literacy	
	R	sig
Segregation	.417**	.000
Reduce	.347**	.000
Reuse	.477**	.000
Recycle	.360**	.000
Disposal	-.189*	.039

p* < .05, ** p < .001

5. Conclusions

It can be concluded that students and employees have a good understanding of environmental issues and are committed to taking action to address them. They know the interconnectedness of all environmental elements and the importance of sustainability.

Students and employees demonstrate good ecological literacy and solid waste management practices. However, there is still room for improvement, particularly in waste reduction for students and employee recycling.

Implementing a pathway to green campus development requires a concerted effort from all stakeholders within the campus community. By embracing sustainable practices and fostering a culture of environmental responsibility, educational institutions can significantly shape a more sustainable future..

6. Recommendations

Based on the findings of the study, the following activities are recommended:

1. Initiate the creation of a Green Campus Development Plan to support sustainable development in the institution. This will provide a green environment for teaching, research, and campus operations. The plan includes the following strategies:

    •   Orientation on Green Campus Development Plans and greening the Campus with trees.

    •   Budget allocation for Green Campus technology and infrastructure.

    •   Strengthen waste segregation and collection—additional properly labelled waste bins/ trash cans in each building.

    •   Provide space for composting activities. Make a compost pit for waste and organic materials.

    •   Prohibit using plastics, straws, and disposable utensils in the cafeteria.

    •   Organize donate for a cause. Encourage donating household items like books, magazines, clothing, kitchen wares, etc.

    •   Manage arts and crafts activities using recyclable materials.

    •   Increase awareness of waste management policies of the campus. Encourage all students, faculty, administrative personnel, parents, and the community to patronize products manufactured using recycled and recyclable materials and be involved in green activities and campaigns.

    •   Organize green talks/seminars, conferences, and workshops to educate campus communities on sustainability.

    •   Integrate greening of classes and teaching courses as a strategic concept in dealing with the environment, sustainability, and green trends.

    •   Establish Waste Material Recovery Facility

2. To foster ecological literacy and develop a strong sense of environmental citizenship, ISUFST may provide activities that incorporate environmental education (EE) and waste management programs. These programs should be geared toward guiding students in acquiring deeper ecological literacy by engaging them in experiential and sustainable education activities.

3. Integrate Education for Sustainable Development (ESD) into the higher education curriculum to equip students with the knowledge and skills to protect the environment and promote sustainable development.

4. Strengthen plans and programs that integrate environmental and sustainability literacy effectively to address complex issues and provide more profound meaning and urgency to the demands of curriculum and assessments.

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