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Climate Action and Environmental Awareness of Undergraduate Students in a State University: Basis for Policy Formulation

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Abstract— *Higher Education Institutions (HEIs) are positioned as critical agents for cultivating sustainability capabilities and integrating concepts required for achieving the Sustainable Development Goals (SDGs) in light of the pressing issue posed by global climate change. To produce inputs for successful university sustainability policies, this study examines the level of climate action awareness and environmental attitude among undergraduate students in a state university. The study used a descriptive qualitative research approach and purposive sampling to choose 14 student leaders from different groups in a state university. Semi-structured interviews were used to gather the data, and thematic analysis was used for analysis. Six (6) themes emerged: Waste Management Implementation, Environmental Advocacy, Inconsistent Facilities and Infrastructure, Engagement gap, Student-Driven Policy Inputs, and Curriculum Mainstreaming. The study concludes that creating a sustainable learning environment calls for more than just passive knowledge; it also calls for mainstreaming climate action into the curriculum and institutionalizing environmental stewardship through student-driven policy participation. These results give the university a basis on which to build its sustainability framework and carry out its mission in relation to the SDGs.*

Keywords— *Enter key words or phrases in alphabetical order, separated by colon.*

I. INTRODUCTION

Climate Action and environmental awareness of undergraduate students a great step towards bringing change to the university. By being conscious and careful in their actions, everyone can contribute to a sustainable and clean learning environment. It is a great way for the university to benefit more and for the students' mindset and knowledge to be widened. Being aware is a key component to contribute to the environmental attitude, as well as to promote input (policy) to further strengthen the university as a green learning haven that attains the Sustainable Development Goals. As this have a limited access on information, promotion of awareness and action, this study paved it way in contributing to the climate action and environmental awareness.

Furthermore, climate action and environmental education are seen as crucial to attaining the Sustainable Development Goals (SDGs). Universities are seen as important establishments for fostering sustainability capabilities and integrating sustainability-related principles into the student experience. Platchak et al., (2022) explained that participation in environmental organizations is linked to greater aspirations to engage in activism, and climate change is undoubtedly the most devastating and widespread crisis in contemporary history. Climate change is a devastating and widespread phenomenon that confronts the world community with an unprecedented challenge that calls for swift and all-encompassing response from all facets of society. As to the university, it has limited include sustainability concepts into governance, research, curricula, and campus management in order to achieve the SDGs.

In order to accomplish global objectives like the SDGs of the United Nations, Higher Education Institutions (HEIs) are essential and encouraged agents for integrating and improving sustainable practices, particularly in waste management. As to the study of Gequinto (2017) higher education has been encouraged by the Ecological Solid Waste Management Act where organizations, such as state universities and colleges (SUCs), to integrate ecological waste management in the educational system and forming a collaboration with private or local organizations. This shows that SUCs a legal foundation and promotes universities to incorporate ecological waste management into their curricula and to promote cooperation with other groups

Furthermore, Romualdo et al., (2022) emphasized that schools are essential for increasing the degree of awareness among students, awareness that they must actively participate in the school's waste management program in order to successfully and sustainably promote suitable waste management practices. Thus, Violanda et al., (2023) emphasized that one of the key players in the functional transformation of our world through the United States is the education sector. SDGs of the United Nations. This strengthened the notions on higher education institutions are more than just academic establishments, it plays a significant role in the world's functional transformation through the field of education, particularly through the implementation of Education for Sustainable Development.

As a sector of education, HEIs are among them empowered by implementing sustainable development through Education for Sustainable Development (ESD). The university finds itself at the crucial intersection of this global issue and the local need for change. This study aims to explore the Climate Action Awareness and environmental attitude among undergraduate students and to utilize the findings as inputs for the formulation of effective university policies on sustainability and climate action. Specifically, this study seeks to answer the following objectives: (1) to determine the extent of practices being implemented by undergraduate students in

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climate action, (2) to analyze the undergraduate students perceive the current role and effectiveness of the facilities, and extracurricular programs in fostering the environmental attitude and climate action and (3) to develop an input to undergraduate students propose institutionalize on consistent climate action practices.

Theoretical Underpinnings

As reiterated in the study of Ajzen (2020) describes three theories, including the later reasoned approach (LAA), the older theory of planned behavior (TPB), and the theory of reasoned action (TRA), together with the experimental and correlational data that support them. In addition to examining possible improvements to the theories and regulators of the connections between theory components, it offers criticisms of certain features of these theories. This involves the awareness of the students that may have the cause and effect on the level of contributing to climate action. This also suggests being aware of the actions and how to eliminate climate change and environmental issues within the school.

II. Methodology

The study used a descriptive qualitative research design, which offers a thorough, in-depth, and rich insight of the phenomena of undergraduate students' eco-environmental awareness and climate action practices, especially from the viewpoint of student leaders in a state university. The study used fourteen (14) student leaders who are currently enrolled as undergraduate students. The participants were chosen using purposive sampling, a non-probability technique where participants are chosen based on their unique knowledge and experience relevant to the research topic. Participants in the study were student leaders from various university organizations.

The researchers created semi-structured questions that were approved by experts in order to gain a thorough grasp of the practices, attitudes, and inputs. An audio recording that is enhanced by thorough field notes to record the responses and provided an informed consent form. Thematic analysis was employed to examine the qualitative data collected. The objective of this methodical procedure is to find, examine, and summarize themes in the data by following the process: (The following steps were executed: (1) audio recordings was verbatim transcribed to turn spoken words into text data; (2) the transcripts was read and reread to obtain a thorough understanding of the participants' narratives; (3) initial codes was generated by highlighting significant phrases or sentences related to the SOP questions; (4) similar codes was grouped into broader, meaningful themes; and (5) themes were reviewed against the transcripts to make sure they accurately represent the data, have been explicitly stated, and have been backed up by responses from the participants.

To safeguard the participants' rights and welfare, the study closely complies with ethical research standards. To this end, a comprehensive consent form outlining the goals, methods, risks, and advantages of the study was given to the fourteen student leaders. The study was completely voluntary to participate. Participants were guaranteed the privacy of their answers. To maintain anonymity, all identifying information is transcribed and reported using pseudonyms. The participants were advised by the researchers that they might opt out of the study or refuse to respond to any questions. Finally, researchers informed participants that, in accordance with ethical norms, the collected data would be safely maintained and destroyed after the study was finished.

III. Findings and Discussion

Based on the responses of the participants, six (6) themes emerged: *waste management implementation, environmental advocacy, inconsistent facilities and infrastructure, engagement gap, student-driven input policy and curriculum mainstreaming.*

Practice in Climate Action Awareness and Environmental Awareness

Based on the responses of the participants, themes emerged: *waste management implementation and environmental advocacy.* Based on the statements of the participants, which show that the university needs to further develop climate action and environmental awareness through environmental advocacy and strengthen waste management segregation

Waste Management Implementation

A significant step toward institutional reform is represented by students' awareness of climate action and their positive attitude toward the environment. Students may help create a clean and sustainable learning environment by acting with awareness, caution, and initiative on a regular basis. The participant responses highlight a clear tension between the presence of waste management infrastructure and the perceived lack of effective implementation and adherence, particularly among the student body. This suggests a significant gap between institutional policy and daily practice, which aligns with the waste management implementation. Moreover, the study of Morales and Oco (2023) the findings showed that students' abilities and application of solid waste management (SWM) are in a positive state. It has an important connection. Students have a high degree of positive knowledge and waste reduction during sustainable waste management deployment. Stakeholders and the school community are urged to keep and implement procedures, regulations, and supplies that would motivate everyone to separate, recycle, and reuse.

Furthermore, Apostol et al., (2022) stressed that educating people, environmental campaigns and student-led movements (such as those in waste management) are essential for fostering the right attitudes that support constructive trash disposal practices. These programs show an increasing awareness of environmental issues and gratitude for accessible waste management measures. S2 observed that *the "waste management implementation... hindi sya gaano napapractice kapag sa mga students na hindi ganun ka-active sap ag-contribute sa paaralan,"* suggesting a problem with student participation and compliance. The core issue, according to S1 notions on the lack of standardization: *"Wala kasing proper*

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segregation practices sa university kaya hindi nagkakaroon ng waste management properly." This points to a failure in the critical step of waste separation. As to S8 observation supports the lack of resources, stating that the university *"walang maayos na Waste Management, nagkukulang sa mga trash bins, tsaka sa signages or reminders."* This emphasized that students were unable to dispose of waste properly due to inconveniences such a shortage of bins are not positioned strategically, which directly contributes to environmental problems.

As to the study of Langit et al., (2024) effectiveness of municipal trash management and the reduction of waste volume. Project implementation recommendations are given to guarantee the municipality's smooth transition to a circular economy and sustainable waste management. S1 and S14 directly attribute this poor practice to insufficient communication and advocacy, with S1 stating the practice is frustrating *"kasi kulang sa information and advocacy,"* and S14 noting the *"It is kind of frustrating on my part, kasi Maganda ang paaralan pero kulang sa information dissemination on segregation."* The arguments made above show that merely having garbage bins is insufficient. This shows an improper segregation, inadequate information distribution, and insufficient reminders/signage highlight the inadequate on the present waste management strategy is thought to be.

Environmental Advocacy

Peracullo and Quindoza (2022) shared that student involvement is motivated by a variety of complex and dynamic factors, including self-satisfaction, moral beliefs, a sense of community, personal history, and awareness of potential environmental repercussions. In the study of Fang (2021) it stated that there are Student organizations aggressively promote greener policies, like the adoption of renewable energy technology and the divestment from fossil fuels, on university campuses, which act as microcosms. Environmental advocacy is a crucial aspect of elevating the awareness and attitude of the students. As S6 shared that *"bilang college student at isang student leader, it is my duty and task to become an advocate sa environment particularly na yung pagiging good example sa ibang mag-aaral."* Added by S1 shared that *"continual learning at process on environmental awareness na hindi ganun nasusupport ng ialng mag-aaral."* Thus, Parks et al., (2023) Environmental education is seen as essential to accomplishing the SDGs, and universities are acknowledged as important institutions for developing sustainability capabilities and integrating sustainability-related principles into the student experience, as S10 shared that *" dapat ang institution ay magakroon ng environment advocacy, kailangan mayroon tamag information dissemination, mas mapalawak ang practice at implementation nito.*"Also, S14 *"dapat ang institution ay may policy patungkol sa climate action sa pamamagitan ng malawak na kaalaman at advocacy sa kanilang sinasakupan."* In the study of Figueroa et al., (2021) activities to reduce, reuse, and recycle as well as resource recovery in the trash, water, industry, and other sectors that support the Philippines' efforts to adopt the circular economy despite several obstacles which examines the state of affairs and provides an overview of how circular economy techniques are being implemented in the Philippines, taking into account goals, the state of implementation, legislative backing, accomplishments, and future plans.

Perceptions of Institutional Role and Efficacy

The results show that management in a state university with an effective road map by currently advocating for two high-level solutions: mainstreaming environmental subjects into the curriculum and institutionalizing policy by including student stakeholders.

Inconsistent Facilities and Infrastructure

further elaborated upon in this collection of responses, which specifically relate the success of climate action and environmental awareness to the physical environment (facilities and infrastructure). Additionally, the Engagement Gap in student engagement is a crucial aspect introduced by those responses. The notion of a green learning haven cannot be realized without significant investment and uniformity in the physical infrastructure, as participants made clearly:

According to S10, *"climate action at environmental awareness ay hindi maipagpapatuloy kapag hindi maayos ang facilities at infrastructure."* This perspective highlights those functional systems, such as trash cans and Management Recovery Areas, are necessary conditions for behavioral change rather than merely accessories. As S3 notions that the school *"must provide waste management recovery area para at least makagenerate ng income on trash,",* which connected adequate infrastructure to long-term economic viability. Lack of visibility and location directly adds to environmental issues, according to S12, who noted that *"there is an inconsistency on facilities and infrastructure, hindi masyado kita ang mga trash bins kaya nagkakaroon pa rin ng mga kalat sa kapaligiran."* As shared by S15 emphasized the need for improvement to "ma-anchor sa Sustainable Development Goals and trash bins were not evident in some areas, some facilities on waste management."

Engagement Gap

Enhancing students' environmental awareness and transforming their competences into pro-environmental behavioral intentions are crucially mediated by institutional policies and programs that support sustainability education and efforts. Results show that environmental programs, like community service and coastal clean-ups, are often limited to a small group of student leaders. S2 shared that *"students were involve naman in different programs sa school kaso nakukulangan lang sa engagement pano sila makkacontribute sa iakakganda at iakkalinis ng isang institution"* which indicating a preliminary desire to take part and this readiness was not linked to significant action.

Added by S5 shared that *"engagement gap is evident in the school kasi ang naiinovlve lang samga coastal clean-up, community service ay mga student leaders, kaya kulang sa mga information dissemination".* This important finding

shows that environmental initiatives are frequently restricted to a small group of students (leaders), which has a substantial impact on the larger student body. Moreover, S9 shared that *"there is an evident engagement gap with the awareness and action of the students particularly on waste management."*

Theoretically, the engagement gap is important because, as the supporting literature indicates, a sustained grassroots movement is necessary to drive urgent climate action. While student organizations can actively promote more environmentally friendly practices and have an impact on official university policy, In the study of Gulliver et al., (2019) the urgent action needed to address our numerous global environmental issues must be sparked by a persistent grassroots movement. Student organizations vigorously advocate greener policies, such as the embrace of renewable energy technologies and on university campuses. Formal university policy can be directly influenced by student-led initiatives and eventually adopted. This was strengthened in the study of Cheon (2020) participation of social science, wherein grassroots activism shows great promise for the future of climate advocacy, even while its impact on policy is yet unknown, and how civil society actors can effectively compel governments and market entities to adopt climate action.

Institutionalize Action Practices of the Institution

Student awareness and favorable attitudes toward the environment are important factors, it often came up short of producing the long-lasting, significant changes needed for institutional reform. By exploring the significance of student-driven policy inputs, this study addresses the crucial need to close the gap between individual student awareness and enforceable, university-wide climate action.

Student-Driven Policy Inputs

Saracanlao et al. (2019) suggested that there should be a policy with the intention of controlling waste produced on the job site and lowering the quantity dumped in landfills in the Victorian Recycling and Resource Recovery Council has provided support for the program. As shared by S7 *"Mas Maganda mas magkaroon ng policy input on waste management as part ng climate action."* This implies that as opposed to informal recommendations, students are searching for specific, enforced rules. Moreover, Romualdo et al. (2022) explained that schools are crucial for raising the degree of awareness among crucial awareness, as well as students who must actively engage in the school's waste management program in order to properly and sustainably promote appropriate waste management practices. S9 suggested that *"If it is possible strengthen the policy inputs sa university kung saan ang mga students ay involved in different programs, activities and projects ng university".* This statement highlights that student participation should go beyond cleaning responsibilities to include planning and decision-making. This implies that students are seeking explicit, enforceable rules rather than loose guidance. Thus, S12 shared that *"data that will be acquired in the study will eventually contribute to the policy inputs, it is a way of having student-driven policy para mas ma-include sys a handbooks or policy talaga to have the green system sa university."* This emphasizes the goal of institutionalizing environmental stewardship through formal university rules, guaranteeing its efficacy and durability. Amparo et al., (2022) emphasized that using low-impact development, incorporating sustainable design to lessen carbon emissions, and making sure the campus sets an example for environmental standards, such as trash minimization, segregation, and recovery. As to Mendoza et al., (2024), in the face of environmental issues, individuals must actively participate and take collective action to pave the way for a more sustainable future. One important tactic for motivating individuals to contribute to environmental protection is environmental education. Through in-depth virtual interviews with young environmentalists, the study integrates the important life experiences research in the Philippine context.

Curricular Mainstreaming

The major goal of curricular mainstreaming is to make sure that formal education results in a responsible and positive attitude toward the environment, rather than just increasing information. As stated in the study of Wodika and Middleton (2020), environmental education becomes an essential part of school. As shared by S11 *"dapat mas palakasin ang knowledge ng mga students on climate action by integrating sa lesson at subject areas."* This implies implementation flexibility, either specialized sessions or smooth incorporation into already-existing themes. In the study of Corpuz et al., (2022) to solve the world's environmental issues, environmental education is essential. Although studies have shown that it has to be intensified, educational institutions are incorporating it into their curricula.

The technical knowledge required for students to comprehend ideas like waste segregation, resource recovery, and emissions reduction is provided by formal sessions and subject integration, turning abstract concerns into concrete actions. As added by S12 "*provide curriculum mainstreaming by including some sessions in the discussion or integration of climate action and awareness in the class."* This highlights a crucial finding on being mobilized for cleanup efforts, students want to be equipped with the information to positively contribute to the creation of policies. The university may dynamically integrate this learning across disciplines owing to the implementation's flexibility, whether it is through customized sessions or seamless integration into already-existing course subjects.

Moreover, S13 shared that "*Mainstreaming of climate action and awareness in some of the classes*", this implies that the participants' conviction that formal knowledge acquisition is the first step required to develop a responsible environmental attitude and guarantee informed participation in environmental projects is highlighted by this important statement. Moreover, as shared by S7 *"sana magkaroon ng mga sessions at integration on waste management, climate action awareness para yung attitude ng isang student ay mas may knowledge siya sa gagawing inputs."* Botchwey et al., (2020) stated that in some research frequently assesses students' practices and awareness of the environment.

Although students can claim to have a strong awareness of environmental principles, they may be less likely to participate in practical activities like planting trees or joining school environmental groups, with recycling and water/energy conservation being popular practices.

Implication to Practice

The realization that waste management implementation is present but ineffectively reinforced suggests that a long-term procedure and policies must be developed in order to revive the implementation of current policies. It is necessary to standardize new containers and identify them with high-contrast, easily comprehensible signage. It is essential to incorporate information into subjects. But putting this information into practice means making it experiential. The waste management program in a state university is in place but inadequately supported has important ramifications, indicating that the university is presently in an uncertain position between operational realities and policy aspirations. To effectively revitalize and strengthen existing sustainability programs, a fundamental shift from token efforts to long-term procedures and institutionalized regulations is required.

The institution must provide mandatory practical environmental education programs that extend beyond traditional classroom instruction. By requiring students to actively participate in sustainable activities, whether through resource recovery projects, supervised waste audits, or campus-wide ecological programs, this change addresses the awareness-action gap. Therefore, awareness plays a crucial role in fostering a shared environmental mindset, which is essential for advancing the contextualized policy inputs required to further solidify the commitment to the SDGs.

In addition to addressing its waste management shortcomings, the university empowers its students as informed stakeholders by institutionalizing environmental literacy and mandating practical action. In conclusion, this strong, comprehensive strategy helps to strengthen the dedication to the SDGs, guaranteeing that the institution takes a proactive role in bringing about change rather than just observing the demands of the global environment.

IV. Conclusions

Based on the data acquired from the responses of the participants, the following conclusions were drawn:

1. There was waste management implementation conducted in the university. However, it is not effectively strengthened and expanded due to some lack of information dissemination and lack of consistent actions.
2. There were inconsistencies on the infrastructure and facilities, such as the shortage of trash bins, non-visible signages, and students who are not knowledgeable and proactive in maintaining cleanliness and sustaining development in the university.
3. Lastly, it is appropriate to have student-driven inputs (policy) and curriculum mainstreaming. Integrating knowledge into subjects and learning areas is a way for students to become more aware and develop a positive attitude.

Recommendations

The results make it imperative that the university quickly design and execute a comprehensive policy framework to regulate environmental awareness and climate action. Enhancing students' environmental awareness and transforming their competences into pro-environmental behavioral intentions are crucially mediated by institutional policies and programs that support sustainability education and efforts. As the world becomes vulnerable, institutions should become an avenue of change and a path of advocates toward a clean and green learning environment. It is recommended that there be input on the policy for climate action and environmental awareness in the school so that every student is better guided toward the enforced rules of the school. This may also help the students towards discipline and becoming more responsible citizens. This encompassing and integrated approach where knowledge is developed through curriculum mainstreaming, discipline is enforced through policy, and rules are contextualized through student input will enable the university to fulfill its mission as a green learning haven, reaffirm its commitment to the SDGs, and produce a generation of environmentally conscious and actively engaged citizens. The inputs may focus on the waste segregation implementation, strengthening the facilities and areas for disposing, recyclable and waste management recovery, and student-driven inputs so that following the institution's guided rules is more contextualized.

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