Carbon Footprint of Novo Ecijano Students: Awareness, Behavioral Intentions, And Practices

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Abstract
This study examined the awareness, behavioral intentions, and practices of Novo Ecijano students in relation to carbon footprint reduction. Findings revealed that most students are young adult females from urban, lower-income households who primarily rely on public transportation. While they exhibit moderate participation in environmental activities, formal membership in environmental organizations remains limited, suggesting the need for structured avenues of engagement. Students demonstrated high levels of awareness regarding the concept, causes, and consequences of carbon footprint, primarily shaped by formal education and media exposure. Moreover, they expressed strong behavioral intentions toward eco-friendly practices, particularly in energy conservation, sustainable consumption, and advocacy, with slightly lower commitment observed in transportation-related actions. Actual practices aligned with these intentions, as energy-saving and waste management behaviors were consistently observed, though transportation choices were constrained by infrastructural limitations. The study underscores the importance of institutional support, accessible infrastructure, and experiential learning opportunities to sustain and deepen these environmentally responsible behaviors. Recommendations include the establishment of student-led environmental clubs, integration of experiential sustainability learning into curricula, provision of financial assistance for low-income students, and improvement of sustainable campus infrastructure. These strategies aim to empower students to translate environmental awareness into consistent, impactful action, thereby contributing to a climate-conscious academic community.
Keywords: *Carbon Footprint, Environmental Awareness, Sustainable Practices, Behavioral Intentions, Environmental Education*

INTRODUCTION

As global awareness of climate change grows, so does the recognition of its harmful effects on the environment, prompting individuals, organizations, and institutions to evaluate their environmental footprints. Educational institutions, being centers for the development of future leaders and professionals, hold significant potential in sshaping sustainable practices. However, the carbon footprints generated by academic activities- such as commuting, energy usage, paper consumption, and the general lifestyle of studies remain an under-researched topic in many universities.

At the Nueva Ecija University of Science and Technology (NEUST) College of Arts and Sciences, students participate in various academic activities that contribute to their collective environmental impact. While many students may not be fully aware of how their academic behavior affects the environment, the urgency of addressing climate change calls for an evaluation of these practices. This study aims to explore the carbon emissions associated with students' academic activities, focusing on aspects such as commuting, electronic device usage, paper consumption, and classroom energy consumption.

Through determining the carbon footprint of these activities, the research seeks to provide a clear understanding of how these factors contribute to environmental harm at NEUST College of Arts and Sciences. Additionally, the study will offer recommendations for sustainable practices and policies that could reduce the environmental impact of students' academic activities. The outcomes of this research

will not only support the college's sustainability efforts but also provide valuable insights for other institutions looking to reduce their carbon footprint.

Climate change is a growing concern, and educational institutions have a role to play in promoting sustainability. One factor overlooked is the environmental impact of students' academic activities, such as commuting, using electronic devices, consumption of paper, and energy usage within the school campus, all contribute to carbon emissions.

This study aims to determine the influence of students' practices, awareness, and behavior on the generation of carbon footprint. By understanding how these activities contribute to the generation of carbon emissions, this research will help raise awareness and suggest ways in which the university can reduce its environmental impact. This study hopes to encourage more sustainable practices within the academic community for environmental benefit.

As climate change becomes an increasingly urgent global issue, there is a growing recognition of the need to evaluate the environmental impact of various sectors, including education. Within academic institutions, particularly at NEUST College of Arts and Sciences, students' academic activities- commuting, use of electronic devices, classroom energy consumption, and paper energy usage- may contribute to a significant carbon footprint. However, there is a lack of comprehensive research exploring the specific environmental impact of these activities. This research seeks to fill this gap by assessing and quantifying the carbon footprint generated by students' academic behaviors, which will help in understanding how educational activities contribute to environmental degradation. The findings could serve as a foundation for implementing sustainable practices and policies within the academic environment.

The primary objective of this research is to determine the carbon footprint associated with students' practices, awareness, and behavioral intentions at NEUST College of Arts and Sciences. Specifically, the study aims to:

1. To identify the demographic factors (e.g., age, sex, year level, residence, socioeconomic status) that may influence students' awareness, behavioral intentions, and practices related to carbon footprint.
2. To determine the level of awareness of Novo Ecijano students regarding carbon footprint, including its concept, causes, and consequences.
3. To assess the behavioral intentions of Novo Ecijano students toward reducing their carbon footprint in the areas of transportation, energy conservation, sustainable consumption, and environmental advocacy.
4. To examine the actual practices of Novo Ecijano students related to carbon footprint reduction, such as energy-saving habits, transportation choices, waste management, and participation in environmental activities.
5. To provide recommendations for strengthening carbon footprint education and promoting sustainable practices among students based on the findings.

REVIEW OF RELATED LITERATURE

The findings revealed that more than half of the students had low level of carbon footprint awareness; whereas no significant difference was found between female and male students in their level of carbon footprint awareness; however students who followed different academic courses had varying degrees of awareness of their carbon footprint. The findings also revealed that half of the students had low level of carbon footprint practices and there exists a statistically significant difference in the mean carbon footprint practice scores of postgraduate students from different streams of education. There is a correlation between carbon footprint awareness and carbon footprint practices as viewed by the postgraduate students. Thus, it can be inferred that as the awareness of carbon footprint increases among postgraduate students, their implementation of practices to reduce carbon footprint also increases (Dash et al., 2023).

The potentially high contributors to carbon footprint are the lack of awareness of recycling, high fuel consumption for personal transport, and high frequency of dining out. In contrast, the carbon footprint from electric usage for students is relatively low due to an obvious fact of the potentially high electric bill.

Overall, the results indicate strong interest in tracking personal carbon footprint but highlight the challenge of encouraging users to follow recommendations. Encouraging users to reduce their carbon footprint should come from different angles, such as governmental control and a unique carbon footprint app with gamification. (Ramil et al., 2024)

Student commuting, specifically single-occupant vehicles, is a significant contributing factor to the carbon footprint of universities. Many universities have action plans and programs to reduce emissions from student commuting; however, the issues of safety, time, and convenience typically outweigh students' motivation to use alternative modes of transportation. For this reason, it is crucial to understand the behavioral research on commuting and the environment and the use of nudging or incentives to change behavior. Effective programs must consider the students' reasons for their mode of transportation and include them in the conversation for solutions (Roknaldin et al., 2024).

The carbon footprint emissions in the studied school areas are still at a low level. The relationship analysis shows a weak significant correlation between (i) sustainability practices and sustainability knowledge, (ii) sustainability practices and carbon footprint, and (iii) green environment and carbon footprint analysis. Similarly, the study shows a moderate relationship between 3R practice variables and carbon footprint analysis in schools. Regression analysis shows that sustainability practices contribute to carbon footprint when compared with sustainability knowledge and green environment. Thus, this shows that sustainability knowledge has a direct relationship with sustainability practices and electricity consumption. The results clearly prove that primary school students show positive elements of sustainability practices. These findings can help schools to identify weak variables, such as green practices knowledge, that need to be improved in order to reduce carbon emissions in schools (Mahat et al., 2017).

Strategies to mitigate climate change often center on clean technologies, such as electric vehicles and solar panels, while the mitigation potential of a quality educational experience is rarely discussed. A majority of course graduates reported pro-environmental decisions (i.e., type of car to buy, food choices) that they attributed at least in part to experiences gained in the course. Furthermore, our carbon footprint analysis suggests that for the average course graduate, these decisions reduced their individual carbon emissions by 2.86 tons of CO2 per year. Surveys and focus group interviews identify that course graduates have developed a strong personal connection to climate change solutions, and this is realized in their daily behaviors and through their professional careers (Cordero et al., 2020).

A study by Belkhir and Elmeligi (2018) found that, if unchecked, ICT GHGE relative contribution could grow from roughly 1–1.6% in 2007 to exceed 14% of the 2016-level worldwide GHGE by 2040, accounting for more than half of the current relative contribution of the whole transportation sector. Their study also highlights the contribution of smartphones and shows that by 2020, the footprint of smartphones alone would surpass the individual contribution of desktops, laptops, and displays. Additionally, according to a study by Prasara-A et al. (2024), it was found that, before the pandemic, electricity use was the most significant GHG emissions-contributing activity. During the COVID-19 period, students' commuting caused a substantial decrease in carbon footprint. After the pandemic, the institutions should prioritize measures to reduce electricity consumption, further expand online learning opportunities, encourage telecommuting for staff, and optimize transportation logistics to minimize GHGs.

Furthermore, according to a study by Priatna et al. (2024), educational institutions play a crucial role in achieving Sustainable Development Goal 13 (SDG 13) "Climate Action" by fostering knowledge, research, advocacy, and sustainable practices. They contribute to climate education and awareness through curriculum development, research and innovation, leadership and institutional action, policy advocacy, capacity building, community engagement, ethical and sustainable values education, and monitoring and reporting. Higher education institutions can integrate climate change education into curricula, equipping students with the necessary skills to address environmental challenges. They can also promote global citizenship and empower individuals to contribute to climate solutions.

METHODOLOGY

The study employed a descriptive quantitative research design to determine the awareness, practices, and behavioral intentions of BS Environmental Science students at NEUST regarding their carbon footprint. Data were gathered through a structured questionnaire focusing on transportation, device usage, paper consumption, food habits, and other academic activities linked to carbon emissions.

A stratified random sampling technique was used, grouping students by year level (1st–4th year) to ensure representativeness. Although the target sample size was 308, only 122 students participated due to time constraints and the shift to synchronous classes.

The research was conducted at the NEUST–General Tinio Campus in Cabanatuan City, Nueva Ecija. Before participation, students were informed of the study's purpose, assured of confidentiality, and participation was voluntary, in compliance with the Data Privacy Act of 2012 (RA 10173).

Data were analyzed using descriptive statistics, including frequency and percentage distribution to profile respondents and weighted mean to evaluate levels of awareness, practices, and behavioral intentions.

RESULTS AND DISCUSSION

1. The Profile of the Respondents

Table 1 Profile of the Respondents

VARIABLE	CATEGORY	f	%
Age	17-18 years old	16	13.11
	19-20 years old	48	39.34
	21-22 years old	41	33.61
	23 years old and above	17	13.93
Sex	Male	34	27.87
	Female	88	72.13
Year Level	1st year	27	22.13
	2nd year	33	27.05
	3rd year	42	34.43
	4th year	20	16.39
Type of Residence	Urban	73	59.84
	Rural	49	40.16
Mode of Transportation	Walking	16	13.11
	Bicycle	6	4.92
	Jeepney	70	57.38
	Tricycle	60	49.18
	Private Vehicle	13	10.66
	Others:	10	8.20
Socio-Econominc Status (Monthly Income)	10,000-15,000 pesos below	84	68.85
	21,000-40,000 pesos	24	19.67
	40,000-70,000 pesos	13	10.66
	70,000-130,000 pesos	1	0.82
	200,000 pesos & below	0	0.00

Participation in Environmental Activities	Yes	63	51.64
	No	59	48.36
Membership in Environmental Organizations	Yes	23	18.85
	No	99	81.15

The demographic data provided offers a detailed breakdown of the characteristics of the respondents, which provides insight into their age, sex, year level, type of residence, mode of transportation, socioeconomic status, and involvement in environmental activities.

The respondents' age is predominantly concentrated in the 19-20 years old group (39.34%), followed by those aged 21-22 years old (33.61%). A smaller portion of the sample falls within the 17-18 years old group (13.11%) and those aged 23 years old and above (13.93%). This indicates that the sample mostly consists of young adults in their late teens to early twenties, which is likely reflective of the student population in this study.

A significant majority of the respondents are female (72.13%), while 27.87% are male. This suggests a gender imbalance in the sample, with females being more represented in this particular group.

Respondents are fairly spread across different year levels. The largest proportion is in the 3rd year (34.43%), followed by the 2nd year (27.05%) and 1st year (22.13%) students. The smallest group is the 4th-year students, accounting for only 16.39%. This distribution shows that the sample is primarily composed of upperclassmen.

More respondents live in urban areas (59.84%) compared to rural areas (40.16%). This suggests that the respondents are largely from more developed areas, which may reflect greater access to resources, educational institutions, and possibly environmental activities.

The majority of students use public transportation, with jeepneys (57.38%) and tricycles (49.18%) being the most common modes of transport. A smaller percentage walk (13.11%), use bicycles (4.92%), or rely on private vehicles (10.66%). A notable 8.20% chose "others," which could include various other modes not captured by the listed options. This reflects the reliance on public transportation in the region. A large portion of respondents comes from households with a monthly income between 10,000-15,000 pesos (68.85%). Fewer respondents report incomes in the 21,000-40,000 pesos range (19.67%), and even fewer from the higher income brackets. This distribution indicates that most respondents come from lower-income households.

A little over half of the respondents (51.64%) participate in environmental activities, while 48.36% do not. This indicates a significant proportion of students are engaged in activities aimed at promoting sustainability, though there is still room for greater participation.

A smaller group of respondents (18.85%) are members of environmental organizations, while the majority (81.15%) are not. This suggests that while some students are actively involved in organized environmental groups, most are not, indicating a potential area for growth in environmental advocacy and involvement.

The demographic results were supported by Sia Su (2008) and Magulod Jr. (2018), who found that female and older students tend to show higher environmental awareness. The dominance of upperclassmen in your sample aligns with findings from Mindoro State University (Masongsong, 2023), which showed greater environmental engagement among higher-year students. The urban residency and reliance on public transport are consistent with Ningrum and Herdiansyah (2018), who noted that urban students have more exposure to environmental issues. The low-income status of most respondents reflects the typical socio-economic background of Filipino students, as highlighted by Nayle et al. (2024), which may limit formal participation in environmental groups despite high awareness. Lastly, the gap between participation in environmental activities and membership in environmental organizations mirrors trends

reported by both Masongsong (2023) and Nayle et al. (2024), emphasizing the need for structured engagement programs.

Therefore, the sample is predominantly young adults in urban areas, with a significant portion of the respondents coming from lower-income households. While many students are involved in environmental activities, fewer are members of environmental organizations, indicating varying levels of engagement and awareness. The data highlights potential opportunities to increase participation and awareness, particularly in terms of organizational membership and active involvement in sustainability efforts.

2. The Level of Awareness of Novo Ecijano Students Regarding Carbon Footprint

Table 2

The Level of Awareness of Novo Ecijano Students in Terms of Carbon Footprint Concept

Carbon Footprint Concept	Mean	Verbal Interpretation
1. I am aware of what a carbon footprint means.	3.28	Very Aware
2. I understand how daily activities contribute to carbon emissions.	3.37	Very Aware
3. I know that carbon footprint is a measure of greenhouse gas emissions.	3.37	Very Aware
4. I have learned about carbon footprint from school or media.	3.39	Very Aware
5. I understand the importance of monitoring one's carbon footprint.	3.33	Very Aware
OVERALL MEAN	**3.35**	**Very Aware**

Legend: 3.26 – 4.00 (Very Aware); 2.51 – 3.25 (Aware); 1.76 – 2.50 (Slightly Aware); and 1.00 – 1.75 (Not Aware)

Based on the data presented in Table 2, the overall mean of 3.35 indicates that Novo Ecijano students are "Very Aware" of the concept of carbon footprint. This high level of awareness reflects a promising outlook for environmental education in the region. The respondents demonstrated a strong understanding of both the definition and implications of carbon footprint, as well as the environmental impact of their personal behaviors. Notably, the item "I have learned about carbon footprint from school or media" obtained the highest mean of 3.39, suggesting that formal education and information dissemination channels—such as schools, television, internet, and social media—play a crucial role in shaping students' environmental consciousness. This underscores the effectiveness of integrating environmental topics into the curriculum and promoting sustainability in mainstream media content.

Moreover, the statements "I understand how daily activities contribute to carbon emissions" and "I know that carbon footprint is a measure of greenhouse gas emissions," both with a mean of 3.37, highlight that students are not only aware of the terminology but also comprehend the cause-and-effect relationship between their everyday actions and environmental degradation. This includes activities such as electricity consumption, transportation choices, and dietary habits, which contribute directly or indirectly to greenhouse gas emissions. The mean score of 3.33 for the item "I understand the importance of monitoring one's carbon footprint" implies that students recognize the value of being proactive in reducing their carbon output. They likely view carbon footprint monitoring as a necessary step toward climate change mitigation.

Even the item with the lowest mean, "I am aware of what a carbon footprint means" (mean = 3.28), still falls under the "Very Aware" category, further confirming that a majority of the students possess baseline knowledge about the concept. This uniformity in high awareness levels suggests that environmental education has achieved a degree of consistency and reach across student populations.

The high level of carbon footprint awareness among Novo Ecijano students is supported by Magulod Jr. (2018), who found that college students in the Philippines demonstrate strong environmental awareness, largely influenced by formal educational exposure and environmental activities within academic settings. This suggests that educational institutions serve as critical platforms for instilling ecological values and promoting sustainability-related knowledge. Lin (2015) further emphasized the value of education by showing that when students engage with tools grounded in environmental behavior theory and persuasive

technology, they not only increase their understanding of carbon footprints but also translate this awareness into concrete behavioral changes. This highlights the importance of using interactive and theory-based learning approaches in environmental education. Additionally, Garcia et al. (2022) confirmed that college students exhibit a high level of awareness about carbon footprint mitigation practices, attributing this to consistent exposure to sustainability topics both in school and through various media outlets. Their findings suggest that when environmental concepts are reinforced across multiple platforms—such as the internet, television, and social media—students are more likely to internalize and apply them in their daily lives. Likewise, Caparoso et al. (2018) emphasized that integrating climate change education into the formal curriculum significantly improves students' understanding of environmental issues and fosters a sense of responsibility toward the environment. This integration encourages students to see their individual roles in addressing global challenges like climate change. Furthermore, the data suggested that Novo Ecijano students are equipped with the cognitive foundation needed to make informed environmental decisions and participate in sustainability initiatives. Their level of awareness positions them as key stakeholders in community-based efforts to combat climate change. However, awareness alone may not necessarily translate to action; thus, it is essential for schools and local government units to reinforce awareness with practical programs, behavior-focused interventions, and student-led environmental projects. Future educational initiatives should not only maintain this high level of awareness but also bridge the gap between knowledge and practice.

Table 3 The Level of Awareness of Novo Ecijano Students in Terms of the Causes of Carbon Footprint

Causes of Carbon Footprint	Mean	Verbal Interpretation
1. I am aware of what a carbon footprint means.	3.47	Very Aware
2. I understand how daily activities contribute to carbon emissions.	3.35	Very Aware
3. I know that carbon footprint is a measure of greenhouse gas emissions.	3.45	Very Aware
4. I have learned about carbon footprint from school or media.	3.46	Very Aware
5. I understand the importance of monitoring one's carbon footprint.	3.24	Aware
OVERALL MEAN	**3.39**	**VERY AWARE**

Legend: 3.26 – 4.00 (Very Aware); 2.51 – 3.25 (Aware); 1.76 – 2.50 (Slightly Aware); and 1.00 – 1.75 (Not Aware)

The data in Table 3 revealed that Novo Ecijano students are "Very Aware" of the causes of carbon footprint, as indicated by the overall mean of 3.39. This suggests a high level of environmental literacy among the student respondents, specifically regarding the various human activities that lead to carbon emissions. Among the individual items, the highest mean score of 3.47 was recorded for the statement "I am aware of what a carbon footprint means," reinforcing that most students have a solid conceptual understanding of the term. This foundational knowledge is essential as it allows them to connect the carbon footprint to its root causes.

Closely following are the items "I have learned about carbon footprint from school or media" (mean = 3.46) and "I know that carbon footprint is a measure of greenhouse gas emissions" (mean = 3.45), which again emphasize the significant role that both formal education and mass media play in raising environmental awareness. These platforms evidently provide students with consistent and accurate information that helps them link their lifestyle habits to environmental impacts.

The mean of 3.35 for "I understand how daily activities contribute to carbon emissions" suggests that students are capable of identifying specific behaviors, such as the use of fossil fuels, overconsumption of electricity, excessive car use, and poor waste disposal, as direct contributors to the carbon footprint. This awareness is critical, as it sets the stage for future behavior modification and responsible decision-making.

Interestingly, the statement "I understand the importance of monitoring one's carbon footprint" received the lowest score at 3.24, falling under the "Aware" category. While still relatively high, this slightly lower rating may imply that although students understand what causes a carbon footprint, they may be less

familiar with tools or methods to measure and monitor their own emissions. This highlights a possible gap between theoretical awareness and practical application.

The high level of awareness among Novo Ecijano students regarding the causes of carbon footprint aligns with findings from several recent studies emphasizing the influence of education and media in shaping environmental literacy. Sahin (2012) found that students with strong environmental motivation and knowledge can accurately identify human behaviors—such as energy consumption and transportation choices—that contribute to carbon emissions. This validates the finding that students in the present study understand the real-life causes of carbon footprints. Likewise, Lin (2015) highlighted that environmental behavior-based tools, when incorporated into the learning process, enhance students' awareness and their engagement with carbon footprint tracking. This supports the need for educational institutions to introduce practical tools that move students from awareness to action. Moreover, Vicente, et. al (2013) found that while university students often possess theoretical environmental knowledge, turning that awareness into action requires experiential learning and institutional support. Their research echoes the study's finding that although students are aware of carbon footprint causes, some are less familiar with monitoring methods—indicating a gap between knowledge and application that needs to be addressed through school programs and practical interventions.

Overall, the findings reflect a well-informed student population that possesses substantial knowledge about the causes of carbon footprint. The challenge moving forward is to convert this high level of awareness into actionable behaviors. Schools and environmental agencies can enhance this by introducing hands-on activities, such as carbon footprint calculators, community energy audits, and campaigns focused on reducing emissions in daily routines. Bridging this small gap between knowledge and action is vital in cultivating a more climate-resilient and environmentally responsible generation.

Table 4 The Level of Awareness of Novo Ecijano Students in Terms of Consequences of Carbon Footprint

Consequences of Carbon Footprint	**Mean**	**Verbal Interpretation**
1. I am aware of what a carbon footprint means.	3.42	Very Aware
2. I understand how daily activities contribute to carbon emissions.	3.54	Very Aware
3. I know that carbon footprint is a measure of greenhouse gas emissions.	3.47	Very Aware
4. I have learned about carbon footprint from school or media.	3.30	Very Aware
5. I understand the importance of monitoring one's carbon footprint.	3.42	Very Aware
OVERALL MEAN	**3.43**	**Very Aware**

Legend: 3.26 – 4.00 (Very Aware); 2.51 – 3.25 (Aware); 1.76 – 2.50 (Slightly Aware); and 1.00 – 1.75 (Not Aware)

The findings presented in Table 4 indicate that Novo Ecijano students are "Very Aware" of the consequences of carbon footprint, with an overall mean of 3.43. This score signifies a strong comprehension among students regarding the adverse effects of excessive carbon emissions on the environment and human health. All the items under this dimension received ratings within the "Very Aware" category, which shows a consistently high level of understanding of how carbon footprint contributes to climate-related challenges.

The highest-rated item, "I understand how daily activities contribute to carbon emissions", obtained a mean score of 3.54, suggesting that students not only know what a carbon footprint is but also recognize its implications when translated into real-world consequences—such as global warming, extreme weather events, sea-level rise, and biodiversity loss. This indicates a growing environmental consciousness and the potential for students to take ownership of their environmental impact.

Closely following are the items "I know that carbon footprint is a measure of greenhouse gas emissions" (mean = 3.47) and "I am aware of what a carbon footprint means" (mean = 3.42). These results suggest that students possess not only surface-level awareness but also an in-depth understanding of the scientific

basis behind the concept. The relatively lower score of 3.30 for "I have learned about carbon footprint from school or media" still falls under "Very Aware," but it may imply that while students are knowledgeable, there is a need to further strengthen the integration of environmental education within academic and media platforms to reinforce learning and increase retention.

Additionally, the item "I understand the importance of monitoring one's carbon footprint" garnered a mean of 3.42, reinforcing the notion that students see the value in tracking and managing their emissions. This is an encouraging sign, as it points toward not just awareness but also a readiness to engage in environmental accountability.

The findings indicate that Novo Ecijano students are highly aware of the consequences of carbon footprint are supported by several recent studies. Magulod Jr. (2018) found that Filipino college students demonstrated a strong awareness of climate change impacts, attributing this to formal education and institutional efforts in environmental advocacy. Similarly, Vicente, et.al (2013) observed that university students who were educated on environmental science topics showed higher levels of concern and understanding of global environmental problems such as greenhouse gas emissions and climate-related effects. Garcia et al. (2022) further emphasized that senior high school students in the Philippines are well-informed about the environmental consequences of their actions, particularly regarding carbon emissions and climate disruption, largely due to school initiatives and the influence of social and digital media. Lin (2015) also noted that environmental behavior tools integrated into classroom settings not only raised students' awareness of carbon footprint consequences but also motivated behavior change through increased accountability. These findings affirm the critical role of education and information access in shaping students' understanding of the environmental consequences of their carbon footprint and highlight the potential of educational institutions to foster environmental responsibility.

The data reflect a commendable level of awareness among students regarding the consequences of carbon footprint. Their responses imply a clear recognition of the link between individual behavior and global environmental outcomes. However, to translate this awareness into proactive behavior, stakeholders such as educators, environmental advocates, and policy-makers must continue to build on this knowledge by promoting sustainable practices and climate action initiatives at the school and community levels. Encouraging students to participate in environmental campaigns, climate summits, and experiential learning activities can further reinforce their understanding and commitment to environmental stewardship.

3. The Behavioral Intentions of Novo Ecijano Students Toward Reducing Their Carbon Footprint

Table 5

The Behavioral Intentions of Novo Ecijano Students in Terms of Reducing Their Carbon Footprint in the Areas of Transportation Choices

Transportation Choices	Mean	Verbal Interpretation
1. I plan to walk instead of riding for short trips.	3.14	Committed
2. I intend to reduce the use of private vehicles.	2.90	Committed
3. I plan to use public transport more often.	3.08	Committed
4. I am willing to carpool to reduce fuel consumption.	3.00	Committed
5. I intend to support biking as an alternative mode of transport.	3.08	Committed
OVERALL MEAN	**3.04**	**Committed**

Legend: 3.26 – 4.00 (Highly Committed); 2.51 – 3.25 (Committed); 1.76 – 2.50 (Slightly Committed); and 1.00 – 1.75 (Not Committed)

Table 5 presents the behavioral intentions of Novo Ecijano students in adopting sustainable transportation choices as a means of reducing their carbon footprint. With an overall mean of 3.04, the students are found to be "Committed" to implementing environmentally responsible transportation behaviors. This suggests that while they may not yet be fully immersed in such practices, they demonstrate a strong intention and willingness to make conscious choices that lower carbon emissions.

Among the listed behaviors, "I plan to walk instead of riding for short trips" scored the highest with a mean of 3.14, indicating a positive attitude toward incorporating low-carbon habits in daily routines. Walking, being one of the most eco-friendly modes of transportation, reflects the students' practical and achievable commitment to reducing carbon emissions.

Similarly, "I plan to use public transport more often" and "I intend to support biking as an alternative mode of transport" both received a mean score of 3.08, showing that students are open to sustainable alternatives, even if it means altering current habits. These results reveal a preference for collective or nonmotorized transport modes that are aligned with global sustainable development goals.

The intention to reduce the use of private vehicles (mean = 2.90) and the willingness to carpool to reduce fuel consumption (mean = 3.00) also fall within the "Committed" category, underscoring a developing mindset among students to reconsider personal convenience in favor of environmental preservation.

Although none of the items reached the "Highly Committed" category (3.26–4.00), the consistency of scores in the "Committed" range is promising. This level of intention demonstrates a favorable disposition toward climate-conscious behaviors, suggesting that students are ready to take the next step toward behavioral change—provided that there is institutional and societal support.

The findings indicating that Novo Ecijano students are committed to adopting sustainable transportation choices align with recent research emphasizing the importance of behavioral intentions in promoting lowcarbon commuting practices. Studies have shown that students' willingness to engage in eco-friendly transportation methods, such as walking, biking, and using public transport, is influenced by various factors, including environmental awareness, infrastructure availability, and social norms. For instance, a study by Winterfeldt, et.al (2024) highlighted that providing students with information about fuel consumption and associated expenses can nudge them towards choosing ridesharing, public transportation, bicycling, or walking over single-occupancy vehicles . Similarly, a study by Peker et al. (2024) indicate that public transport and walking are the predominant modes, with significant negative associations being observed between car ownership and the likelihood of choosing these sustainable options. Key findings reveal that, as trip distances increase, students are more likely to use public transport, while higher income levels decrease reliance on both public transport and walking. Male students demonstrate a higher preference for these modes compared to female students. Environmental perceptions, including feelings of safety and satisfaction with infrastructure, play a critical role in shaping transportation choices, highlighting the need for improved lighting, walkability, and public transport quality. These insights have important implications for transportation policy, suggesting that reducing private vehicle reliance and enhancing public transport services can significantly promote sustainable travel behaviors.

The results indicate that Novo Ecijano students show meaningful behavioral intentions in adopting greener transportation choices. These intentions, when supported by adequate infrastructure such as safe sidewalks, bike lanes, and reliable public transportation systems, can transform into long-term habits. Schools, local governments, and community leaders are therefore encouraged to build on this commitment by offering accessible options, awareness campaigns, and incentive programs to further cultivate and reinforce sustainable transport behaviors.

Table 6 The Behavioral Intentions of Novo Ecijano Students in Terms of Reducing Their Carbon Footprint in the Areas of Energy Conservation

Energy Conservation	**Mean**	**Verbal Interpretation**
1. I intend to turn off unused lights and appliances.	3.48	Highly Committed
2. I plan to use energy-efficient appliances at home.	3.35	Highly Committed
3. I am willing to reduce the use of air-conditioners or fans.	3.13	Committed
4. I plan to conserve energy whenever possible.	3.36	Highly Committed
5. I will promote energy-saving habits to my family and friends.	3.42	Highly Committed
OVERALL MEAN	**3.35**	**Highly Committed**

Legend: 3.26 – 4.00 (Highly Committed); 2.51 – 3.25 (Committed); 1.76 – 2.50 (Slightly Committed); and 1.00 – 1.75 (Not Committed)

Table 6 highlights the behavioral intentions of Novo Ecijano students in terms of conserving energy as a means of reducing their carbon footprint. The findings reveal an overall mean of 3.35, which falls under the "Highly Committed" category. This suggests a strong and proactive inclination among students to adopt energy-saving practices in their daily lives, reflecting a high level of environmental responsibility.

Among the items, the highest mean score was recorded for "I intend to turn off unused lights and appliances" at 3.48, indicating that most students are already mindful of one of the most basic and effective energy-saving habits. This simple yet impactful behavior is a positive indicator of their growing ecological consciousness.

Furthermore, students showed strong intentions to "promote energy-saving habits to family and friends" (mean = 3.42) and "conserve energy whenever possible" (mean = 3.36), both classified as "Highly Committed." These responses reflect not only personal action but also a readiness to influence others, which can lead to broader community impact. It demonstrates that energy conservation is not just perceived as an individual responsibility but also as a collective advocacy among youth.

The item "I plan to use energy-efficient appliances at home" also received a "Highly Committed" rating with a mean of 3.35, suggesting that students recognize the importance of energy-efficient technology in minimizing energy consumption. However, this intention may still depend on household decision-making and economic constraints, which should be addressed through awareness and access programs.

Only one item, "I am willing to reduce the use of air-conditioners or fans", received a slightly lower mean of 3.13, classified as "Committed." This may reflect practical or comfort-related concerns, particularly in hot climates, indicating a potential barrier to energy reduction efforts in this area. Nonetheless, the score still reflects a significant level of intention to change habits when possible.

According to, Aruta (2022) emphasized that science literacy plays a critical role in promoting energy conservation behaviors among Filipino youth. His analysis of PISA 2018 data revealed that students who possess a higher understanding of scientific concepts related to climate change are more likely to engage in energy-saving practices, such as turning off unused appliances and using energy-efficient technology. This relationship is further strengthened when students have strong confidence or efficacy in applying what they know about climate change to real-life actions. On the other hand, Simpao and Yabut (2022) found that university students in Metro Manila who have substantial environmental knowledge and positive environmental attitudes are more inclined to practice conservation behaviors. These include promoting energy-saving habits to peers and family, as well as being mindful of everyday energy use. Their study highlights that knowledge alone is not enough; the attitude toward the environment significantly influences the intention to conserve energy. Also, it revealed that Filipino students who have personal or observed experiences with the effects of climate change tend to show a stronger intention to conserve household energy. This intention is mediated by their concern about climate change and their level of environmental knowledge. Their study supports the idea that real-world experiences, paired with education, can lead to a deeper commitment to energy conservation.

Overall, the results show that Novo Ecijano students are actively engaged and highly committed to energy conservation as part of their strategy to reduce carbon emissions. Their behavioral intentions align well with climate mitigation goals, and this level of commitment can be further strengthened by integrating environmental practices into school programs, home routines, and local policies. Support mechanisms—such as energy education campaigns, energy-efficient school programs, and youth-led initiatives—could serve to sustain and amplify these positive intentions into long-term environmental action.

Table 7 The Behavioral Intentions of Novo Ecijano Students in Terms of Reducing Their Carbon Footprint in the Areas of Sustainable Consumption

Sustainable Consumption	**Mean**	**Verbal Interpretation**
1. I intend to bring reusable bags when shopping.	3.45	Highly Committed
2. I plan to reduce the use of single-use plastics.	3.49	Highly Committed

3. I will avoid wasting food.	3.60	Committed
4. I plan to choose eco-friendly or sustainable products.	3.54	Highly Committed
5. I intend to practice the 3Rs (Reduce, Reuse, Recycle) in daily life.	3.54	Highly Committed
OVERALL MEAN	**3.53**	**Highly Committed**

Legend: 3.26 – 4.00 (Highly Committed); 2.51 – 3.25 (Committed); 1.76 – 2.50 (Slightly Committed); and 1.00 – 1.75 (Not Committed)

Table 7 presented the behavioral intentions of Novo Ecijano students regarding sustainable consumption practices to mitigate their carbon footprint. The data shows an overall mean of 3.53, which falls under the "Highly Committed" category. This suggests a strong willingness among students to embrace sustainable habits that reduce environmental impact, particularly those involving consumer choices. The highest mean was recorded for the item "I will avoid wasting food" with a score of 3.60, which is still interpreted as "Highly Committed." This indicates a high level of awareness among students about the environmental consequences of food waste, such as the loss of resources used in food production and the methane emissions generated by organic waste in landfills.

Following closely are the items "I plan to choose eco-friendly or sustainable products" and "I intend to practice the 3Rs (Reduce, Reuse, Recycle) in daily life," both with a mean of 3.54. These scores show that students are not only aware of environmental issues but also ready to take action through conscious consumer behavior and responsible waste management. Their willingness to apply the 3Rs in their daily routines reflects a holistic understanding of sustainability, extending beyond occasional acts to consistent lifestyle choices.

The item "I plan to reduce the use of single-use plastics" garnered a mean of 3.49, affirming strong commitment to combat plastic pollution—a major environmental issue in the Philippines. This intention aligns with national and global movements to eliminate unnecessary plastic use and adopt more sustainable packaging alternatives.

Lastly, "I intend to bring reusable bags when shopping" obtained a mean of 3.45, which still falls under "Highly Committed." This practice, though simple, is a clear step toward reducing plastic waste, and the students' favorable response indicates the normalization of such sustainable habits.

Recent studies indicate that university students' intentions to engage in sustainable consumption are significantly influenced by factors such as environmental knowledge, social responsibility, and perceived behavioral control. For instance, Lin (2015) found that altruistic and ecological values, along with national and university norms, positively influence green consumption intentions among university students in the Guangdong-Hong Kong-Macao Greater Bay Area. Similarly, Tuñacao and Gilitwala (2022) reported that environmental knowledge and attitudes significantly affect the purchase intentions of millennials in Metro Manila towards environmentally sustainable clothing.

The findings reflected that Novo Ecijano students are deeply engaged and highly committed to adopting sustainable consumption behaviors. Their responses demonstrate a forward-thinking attitude and a readiness to take concrete steps toward environmental preservation. These behavioral intentions, if supported through consistent education, community initiatives, and accessible alternatives, could translate into long-term sustainable practices. Schools and local government units may enhance these efforts by promoting zero-waste campaigns, establishing eco-friendly school policies, and rewarding environmentally conscious behavior to sustain and elevate the students' environmental commitment.

Table 8 The Behavioral Intentions of Novo Ecijano Students in Terms of Reducing Their Carbon Footprint in the Areas of Advocacy and Involvement

Advocacy and Involvement	**Mean**	**Verbal Interpretation**
1. I plan to share information about reducing carbon footprints.	3.43	Highly Committed
2. I intend to join environmental activities in my school or community.	3.32	Highly Committed

3. I am willing to advocate for environmental awareness online.	3.43	Committed
4. I want to support campaigns for climate action.	3.56	Highly Committed
5. I intend to stay informed about environmental issues.	3.58	Highly Committed
OVERALL MEAN	**3.46**	**Highly Committed**

Legend: 3.26 – 4.00 Highly Committed (HC); 2.51 – 3.25 (Committed); 1.76 – 2.50 (Slightly Committed); and 1.00 – 1.75 (Not Committed)

Table 8 illustrated the behavioral intentions of Novo Ecijano students regarding advocacy and involvement in reducing their carbon footprint. The overall mean of 3.46, which is categorized as "Highly Committed," reflects that students are not only prepared to adopt individual lifestyle changes but are also inclined to take on proactive roles in promoting environmental awareness and climate action within their communities.

The highest mean is observed in the item "I intend to stay informed about environmental issues," with a score of 3.58. This reveals a strong desire among students to remain updated on environmental matters, recognizing that continuous learning and awareness are foundational to effective advocacy and decisionmaking.

Closely following is the item "I want to support campaigns for climate action," which has a mean of 3.56. This suggests that students are open to contributing to broader environmental movements and are aware of the importance of collective action in addressing climate change. Their support may manifest in participation in school-initiated projects, community activities, or even national and global environmental drives.

Items such as "I plan to share information about reducing carbon footprints" and "I am willing to advocate for environmental awareness online" both received a mean of 3.43, indicating that students recognize the power of communication and digital platforms in spreading awareness. In the digital age, online advocacy plays a crucial role in educating peers, shaping public opinion, and encouraging environmentally responsible behavior.

The item "I intend to join environmental activities in my school or community" obtained a slightly lower mean of 3.32, though still within the "Highly Committed" range. This shows that while students are open to participation, logistical constraints such as time, access to activities, or lack of opportunities may slightly influence actual involvement. Schools and local institutions can build on this positive intent by creating more avenues for youth engagement in environmental programs.

The behavioral intentions of Novo Ecijano students to engage in advocacy and involvement for reducing their carbon footprint emphasized that students' environmental awareness significantly influences their willingness to participate in environmental advocacy programs. The research found that increased exposure to environmental education within the school curriculum promotes student engagement in initiatives related to environmental protection and sustainability (Cruz & Tantengco, 2017). According to a study by Damanik and Saliman (2023), results show that formal education in schools and social activities, such as interactions between students, can form a culture that supports sustainable collective action. An evaluation of the student movement in climate change mitigation, including activities such as recycling and waste collection, provides insight into its positive impact. Moreover, Larose, et.al (2022) demonstrated that student-led participatory workshops on climate change significantly improve environmental understanding and inspire active advocacy. Their case study revealed that students who collaboratively explore sustainability issues are more likely to propose and pursue concrete climate actions within their schools and communities. Furthermore, Boca & Saraçli (2019), it was revealed that students receiving academic education are involved in activities regarding environmental protection(volunteer, warnimg, participation, recycling of materials using the new product and "greener" alternative energy. Overall, the findings from this table underscore the strong commitment of Novo Ecijano students to act as environmental stewards not just in personal practice but also in broader social contexts. Their willingness to engage in advocacy and information-sharing is vital in cultivating a community that is both environmentally conscious and action-oriented. These results imply a readiness among the youth to take on leadership roles in climate-related initiatives, which should be nurtured through policy support, empowerment programs, and integration of environmental education in school curricula.

4. The Actual Practices of Novo Ecijano Students Related to Carbon Footprint Reduction

Table 9

The Actual Practices of Novo Ecijano Students Related to Carbon Footprint Reduction in Terms of Energy-Saving Practices

Energy-Saving Practices	Mean	Verbal Interpretation
1. I turn off lights when leaving a room.	3.75	Always Practiced
2. I unplug chargers and appliances when not in use.	3.67	Always Practiced
3. I avoid excessive use of air-conditioning or electric fans.	3.33	Always Practiced
4. I limit screen time to save electricity.	3.06	Often Practiced
5. I use energy-efficient bulbs or devices at home.	3.33	Always Practiced
OVERALL MEAN	**3.43**	Always Practiced

Legend: 3.26 – 4.00 (Always Practiced); 2.51 – 3.25 (Often Practiced); 1.76 – 2.50 (Sometimes Practiced); and 1.00 – 1.75 (Never Practiced)

Table 9 presented the actual energy-saving practices observed by Novo Ecijano students as part of their efforts to reduce carbon footprint. The overall mean is 3.43, which falls under the interpretation "Always Practiced." This suggests that energy conservation has become a consistent and conscious habit among the majority of the students.

The highest-rated behavior is "I turn off lights when leaving a room," which received a mean score of 3.75. This implies that students are highly mindful of basic energy-saving practices in their daily routines, likely influenced by parental guidance, school programs, or social awareness campaigns. Similarly, the item "I unplug chargers and appliances when not in use" scored 3.67, showing strong compliance with best practices that reduce phantom energy consumption—a significant yet often overlooked contributor to household energy use.

The responses to "I avoid excessive use of air-conditioning or electric fans" and "I use energy-efficient bulbs or devices at home," both with a mean of 3.33, further support the notion that students are applying environmentally responsible choices not only in personal behavior but also in household-level decisionmaking. This is especially relevant in areas like Nueva Ecija, where hot weather often increases reliance on cooling appliances, thus making efforts to moderate usage even more meaningful.

Interestingly, the lowest mean, 3.06, is for the item "I limit screen time to save electricity." Though still within the "Often Practiced" category, this result suggests a relative challenge for students in reducing screen time—a reflection of the growing dependence on digital devices for education, communication, and entertainment. While their intention to conserve energy is evident, lifestyle demands and habits may hinder full compliance in this particular aspect.

According to Delmas and Teng, (2024) explored the relationship between environmental knowledge, attitudes, and conservation behaviors among university students in Metro Manila. Their findings indicate that higher environmental knowledge and positive attitudes towards conservation significantly predict actual energy-saving behaviors, such as turning off unused appliances and utilizing natural lighting. Also, the study by Ogbuanya and Nungse (2020) revealed that university students who were exposed to an Energy Conservation Awareness Package (ECAP) significantly improved their energy-saving behaviors, particularly in turning off lights when not in use and unplugging appliances, indicating the effectiveness of awareness programs in promoting sustainable habits among youth. Furthermore, it encourages minimizing standby power use and managing screen time by switching off electronics completely when not in use—practices that align with the intentions of students to reduce unnecessary energy consumption (Belardo, 2020).

The results indicated that Novo Ecijano students actively engage in energy-saving practices, with many already embedded in their daily routines. The high scores across most items highlight a commendable level of environmental responsibility. These behaviors not only contribute to carbon footprint reduction but also foster sustainable living habits that can influence households and communities at large. To

further enhance these practices, educational initiatives can focus on the long-term benefits of energy conservation and address areas like digital consumption, where behavioral change is still evolving.

Table 10 The Actual Practices of Novo Ecijano Students Related to Carbon Footprint Reduction in Terms of Transportation Habits

Transportation Habits	Mean	Verbal Interpretation
1. I walk or bike to nearby places instead of riding.	3.13	Often Practiced
2. I take public transportation when available.	3.45	Always Practiced
3. I avoid unnecessary trips that require fuel.	3.02	Often Practiced
4. I carpool when going to school or events.	2.74	Often Practiced
5. I choose routes that help save fuel or energy.	3.13	Often Practiced
OVERALL MEAN	**3.09**	Often Practiced

Legend: 3.26 – 4.00 (Always Practiced); 2.51 – 3.25 (Often Practiced); 1.76 – 2.50 (Sometimes Practiced); and 1.00 – 1.75 (Never Practiced)

Table 10 showed the actual transportation habits practiced by Novo Ecijano students in an effort to reduce their carbon footprint. The overall mean is 3.09, which falls under the category "Often Practiced." This indicates that while students demonstrate positive transportation behaviors, there is still room for improvement in terms of consistent, sustainable commuting practices.

Among the indicators, the highest-rated item is "I take public transportation when available" with a mean score of 3.45, classified as "Always Practiced." This reflects students' preference or necessity to use public modes of transport, which is a positive step toward reducing individual carbon emissions. This practice may also be influenced by economic considerations and the accessibility of public transit in the locality.

The items "I walk or bike to nearby places instead of riding" and "I choose routes that help save fuel or energy" both scored 3.13, falling under the "Often Practiced" category. These results suggest a good level of awareness among students regarding the benefits of active and energy-efficient travel. However, the practice may be limited by factors such as safety, weather conditions, or lack of infrastructure like sidewalks and bike lanes.

The mean score for "I avoid unnecessary trips that require fuel" is 3.02, indicating that while students are mindful of travel efficiency, the habit of minimizing non-essential trips is not yet fully embedded. Similarly, "I carpool when going to school or events" received the lowest mean of 2.74, which, although still "Often Practiced," points to challenges in organizing or accessing carpooling arrangements. This could be due to scheduling conflicts, lack of coordinated systems, or cultural preferences for independent travel.

A study conducted at the University of the Philippines Cebu by Cortes (2022) revealed that student mobility is one of the most carbon-intensive activities within the university, highlighting the significant impact of commuting habits on the institution's overall greenhouse gas emissions. Furthermore, Rones et al. (2025) conducted a public survey in Metro Manila, assessing the impact of climate change on commuting patterns. The study found that extreme weather events have influenced individuals, including students, to adapt their commuting habits, such as shifting to more sustainable modes of transportation, to mitigate the adverse effects of climate change.

Overall, the findings revealed that Novo Ecijano students are making commendable efforts in practicing low-emission transportation habits, particularly in using public transportation and opting for energysaving routes. However, the less frequent adoption of walking, biking, and carpooling suggests the need for supportive measures such as improved infrastructure, transportation planning, and environmental education campaigns. Encouraging community-based efforts and school-led initiatives may further promote sustainable travel behavior among students.

Table 11 The Actual Practices of Novo Ecijano Students Related to Carbon Footprint Reduction in Terms of Waste Reduction and Recycling

Waste Reduction and Recycling	Mean	Verbal Interpretation
1. I practice waste segregation at home or school.	3.40	Always Practiced
2. I bring my own tumbler or container to avoid disposables.	3.60	Always Practiced
3. I reuse notebooks, paper, or other materials.	3.45	Always Practiced
4. I recycle plastic, paper, and metal waste.	3.35	Always Practiced
5. I avoid buying overly packaged products.	3.25	Often Practiced
OVERALL MEAN	**3.41**	Always Practiced

Legend: 3.26 – 4.00 (Always Practiced); 2.51 – 3.25 (Often Practiced); 1.76 – 2.50 (Sometimes Practiced); and 1.00 – 1.75 (Never Practiced)

The results from Table 11 presented the actual practices of Novo Ecijano students related to carbon footprint reduction in terms of waste reduction and recycling. The overall mean of 3.41, categorized as "Always Practiced," indicates a generally positive and consistent engagement in sustainable practices among the students. Among the specific practices, the highest-rated activity is bringing their own tumbler or container to avoid disposables (mean = 3.60), which falls under the "Always Practiced" category. This suggests a strong commitment to reducing single-use plastics and adopting reusable alternatives.

The second highest mean score of 3.45 is for reusing notebooks, paper, or other materials, reflecting a solid commitment to reducing waste by reusing items. This is followed closely by practicing waste segregation at home or school, which has a mean of 3.40, also categorized as "Always Practiced." This demonstrates that students consistently engage in sorting waste to facilitate recycling, an important practice in reducing the environmental impact of waste.

Recycling plastic, paper, and metal waste (mean = 3.35) is another practice that students report as always being practiced, reinforcing their proactive approach to recycling. However, avoiding buying overly packaged products, with a mean score of 3.25, is slightly lower and categorized as "Often Practiced." While this still indicates a notable level of awareness, it suggests that there might be occasional challenges or limitations in avoiding products with excessive packaging, possibly due to convenience or availability of alternatives.

Murillo et al. (2021) examined the waste management practices and carbon footprint among households of senior high school students. The research revealed that students highly practiced recycling and composting, contributing to effective waste reduction and a lower carbon footprint. The study emphasized the importance of educating students on proper waste segregation and management to enhance environmental sustainability. Moreover, a study conducted by Dinglasan et al. (2021) highlighted the university's initiatives in promoting waste reduction and recycling among students. Through programs like "Black Out! Green In!" and the Ecological Solid Waste Management Program, the university encouraged students to adopt greener lifestyles, including proper waste segregation and recycling practices, especially during the new normal brought about by the COVID-19 pandemic.

In conclusion, the results showed that Novo Ecijano students consistently engage in waste reduction and recycling practices, with a particular emphasis on reusing and segregating waste. While the overall adherence to these sustainable practices is high, there remains some room for improvement, especially in reducing the purchase of overly packaged products. These findings reflect the students' awareness of environmental issues and their commitment to adopting more sustainable practices in daily life.

Table 12 The Actual Practices of Novo Ecijano Students Related to Carbon Footprint Reduction in Terms of Participation in Environmental Activities

Participation in Environmental Activities	Mean	Verbal Interpretation
1. I join clean-up drives or tree planting activities.	3.11	Often Practiced
2. I participate in school projects related to environmental protection.	3.19	Often Practiced
3. I follow environmental advocacy pages online.	3.33	Always Practiced
4. I encourage friends or family to be eco-friendly.	3.35	Always Practiced

5. I read or watch materials about climate change and the environment.	3.30	Always Practiced
OVERALL MEAN	**3.26**	Always Practiced

Legend: 3.26 – 4.00 (Always Practiced); 2.51 – 3.25 (Often Practiced); 1.76 – 2.50 (Sometimes Practiced); and 1.00 – 1.75 (Never Practiced)

The results from Table 12 showed the actual practices of Novo Ecijano students related to carbon footprint reduction in terms of their participation in environmental activities. With an overall mean of 3.26, which falls within the "Always Practiced" category, the data reflects a strong commitment among students to engage in environmental activities that contribute to sustainability.

Among the specific practices, the highest-rated activities are encouraging friends or family to be ecofriendly (mean = 3.35) and reading or watching materials about climate change and the environment (mean = 3.30). Both activities fall under the "Always Practiced" category, suggesting that students actively promote environmental awareness within their social circles and engage in self-education to stay informed about pressing environmental issues. These results point to a well-developed sense of responsibility toward climate change and environmental advocacy.

Additionally, following environmental advocacy pages online (mean = 3.33) also shows that students regularly engage with content that promotes sustainability, further reinforcing their awareness and involvement in environmental issues.

On the other hand, joining clean-up drives or tree planting activities (mean = 3.11) and participating in school projects related to environmental protection (mean = 3.19) were categorized as "Often Practiced." While these activities are still practiced frequently, the slightly lower scores suggest that participation in such events might not be as consistent as other environmentally focused behaviors, possibly due to the availability of such activities or time constraints.

According to the study of Cruz & Tantengco (2017) revealed that the participation in environmental programs, the respondents sometimes do the tasks of recycling; water and energy conservation; non-use of harmful products; creative possible solution; and social media solution. They seldom do the tasks of participating in tree planting and joining in school's environmental clubs. Students' interview revealed that in spite of the almost the same programs about environmental care cited by the officers of the different school clubs, not all of their schoolmates had initiatives in keeping the school campus clean. Through the guidance of their parents, the students participate in environmental practices at home. Also, the study of Masongsong (2023) found that students exhibited high levels of environmental awareness and actively engaged in activities like waste management, resource conservation, and environmental initiatives such as tree planting. The positive correlation between awareness and participation underscores the effectiveness of environmental education in fostering sustainable practices among students.

Therefore, the results indicated that Novo Ecijano students are highly engaged in environmental activities, particularly those that allow them to actively promote eco-friendly behaviors and stay informed about environmental issues. While participation in physical environmental activities like clean-up drives or school projects could be improved, the overall trend shows that students are making significant efforts to contribute to environmental protection in both direct and indirect ways.

5. Recommendations for Strengthening Carbon Footprint Education and Promoting Sustainable Practices Among Novo Ecijano Students

Table 13

Recommendations for Strengthening Carbon Footprint Education and Promoting Sustainable Practices Among Novo Ecijano Students

Area of Concern	**Proposed Recommendations**	**Rationale**	**Quantifiable Success**	**Offices/Persons**	**Budget Allocation**	**Time Frame**

	ion		Indicators	Responsible		
Low formal membership in environmental organizations despite awareness	Establish and promote student-led environmental clubs in all departments	Providing structured platforms fosters deeper engagement and active participation	- Number of active student environmental groups- Membership growth rate- Number of organized activities	Office of Student Affairs, Environmental Coordinators, Student Council	₱30,000 (initial support for training and activities)	Within 6 months
Need for experiential learning to reinforce awareness	Integrate hands-on environmental activities into curriculum (e.g., carbon audit projects, eco-challenges, school-wide Earth Week)	Enhances practical understanding and reinforces classroom learning with real-world impact	- Number of classes implementing eco-projects- Student participation rate- Improvement in post-activity assessments	Academic Affairs, Faculty Members, NSTP Coordinators	₱50,000 (materials, incentives, logistics)	Academic Year 2025-2026
Strong behavioral intention requires institutional support	Install and improve sustainable infrastructure (e.g., bike racks, shaded walkways, recycling stations)	Addresses infrastructure barriers that prevent eco-friendly behavior	- Increased use of biking and walking- Volume of recyclables collected- Decrease in single-use items on campus	Campus Planning Office, Admin Services, LGU Partners	₱200,000 (infrastructure investment)	1 year
Students highly engaged online, less in physical activities	Launch a "Green Rewards Program" that incentivizes participation in school-led clean-up drives and eco-events	Converts online advocacy to tangible action and reinforces positive behavior	- Number of student participants per activity- Frequency of eco-events- Points/rewards redeemed	Student Affairs Office, Environmental Clubs, Campus Org Advisers	₱40,000 (rewards, logistics)	1 school year, renewable

Lowerincome and urban background of students	Provide financial and logistical support for participation in off-campus ecoinitiatives and training	Ensures inclusivity and equal opportunity in sustainabilit y programs	- Number of supported participants- Feedback from beneficiaries - Participatio n in external programs	Scholarship Office, Guidance Office, Partner NGOs	₱25,000 (transport, allowances , training fees)	Per semeste r

The table titled "Recommendations for Strengthening Carbon Footprint Education and Promoting Sustainable Practices Among Novo Ecijano Students" outlines key strategies to enhance environmental education and encourage sustainable practices among students. One major recommendation is to establish and promote student-led environmental clubs within academic institutions. Although students demonstrate a solid understanding of environmental issues, formal membership in environmental organizations remains low. By providing a structured platform for engagement, such clubs can foster deeper involvement, allowing students to organize events, campaigns, and community projects that put their knowledge into practice. This approach aims to increase student participation and enhance the overall environmental impact within the academic community.

Another important recommendation is to integrate experiential learning into the curriculum. While students are well-versed in the theoretical aspects of carbon footprint and sustainability, applying this knowledge through hands-on activities is vital for reinforcing their commitment. Activities such as carbon footprint audits, sustainability challenges, or school-wide eco-initiatives would give students an opportunity to practice what they have learned, fostering a more profound connection to sustainability and encouraging them to incorporate it into their daily lives. The incorporation of these experiences into the academic setting would enhance students' environmental awareness and inspire them to adopt more sustainable behaviors.

To further support sustainable practices, it is essential to invest in improving campus infrastructure. Providing eco-friendly infrastructure, such as bike racks, walking paths, and recycling stations, would remove barriers to environmentally responsible behaviors like sustainable commuting and waste reduction. By making these options more accessible and convenient, students would be better able to adopt greener practices, such as walking or biking to school, and participate in more effective waste management systems. This infrastructure would not only encourage students to make eco-friendly choices but would also signal the institution's commitment to sustainability.

Additionally, launching a "Green Rewards Program" can further incentivize students to engage in physical environmental activities. While students are highly engaged in online advocacy, participation in physical activities such as clean-up drives or environmental projects is often limited. A reward-based system could motivate students to participate in tangible, on-the-ground environmental efforts, thus translating their online advocacy into real-world actions. This program would encourage greater participation in sustainability initiatives, strengthening the sense of environmental responsibility among students. Lastly, offering financial and logistical support for students, particularly those from lower-income households, would ensure that all students have equal access to eco-initiatives and environmental education programs. By addressing economic barriers, this recommendation would promote inclusivity and provide opportunities for all students, regardless of their financial background, to engage in sustainability practices. Financial support for activities like off-campus eco-trainings and external environmental programs would increase participation and create a more diverse and involved student body.

Overall, these recommendations aim to bridge the gap between environmental knowledge and action. By focusing on infrastructure, experiential learning, student-driven initiatives, and inclusivity, the proposed

strategies would foster a more engaged, responsible, and environmentally conscious student body. Through these efforts, Novo Ecijano students would be better equipped to reduce their carbon footprint, advocate for sustainable practices, and lead efforts to create a more sustainable future.

CONCLUSION

1. The majority of students are young adult females living in urban areas, primarily from lower-income households, and rely heavily on public transportation. While there is a moderate level of participation in environmental activities, formal membership in environmental organizations remains low, indicating that students may be environmentally aware but lack structured avenues for deeper involvement. These demographic characteristics suggest the need for more inclusive and accessible environmental programs, especially for students from low-income backgrounds and those in urban settings. Enhancing student engagement through organized environmental groups could help strengthen sustainability awareness and practices within the academic community.
2. Novo Ecijano students are very aware of the concept, causes, and consequences of carbon footprint, as evidenced by consistently high mean scores across all dimensions. This indicates a strong foundation in environmental literacy, largely influenced by formal education and media exposure. However, while students demonstrate a solid understanding of carbon footprint and its impact, there remains a need to reinforce this awareness with practical applications and behavior-driven interventions. Strengthening experiential learning and encouraging active participation.
3. Novo Ecijano students demonstrate a strong and consistent behavioral intention to reduce their carbon footprint across various areas, including transportation choices, energy conservation, sustainable consumption, and advocacy and involvement. While their commitment to sustainable transportation behaviors is at a "Committed" level, they show a "Highly Committed" level of intention in the areas of energy conservation, sustainable consumption, and environmental advocacy. This suggests that the students are environmentally aware, motivated to adopt eco-friendly practices, and ready to influence others toward climate-positive actions. However, to translate these intentions into sustained behavior, institutional support, accessible infrastructure, and continued environmental education are necessary. These results emphasize the critical role of schools, local governments, and communities in fostering and reinforcing students' commitment to environmental stewardship.
4. Novo Ecijano students consistently demonstrate environmentally responsible behaviors aimed at reducing their carbon footprint, with practices in energy conservation, waste reduction, recycling, and participation in environmental activities being generally rated as "Always Practiced." Among these, energysaving habits and waste management practices are well embedded in their routines, reflecting a strong sense of environmental responsibility at both personal and household levels. However, transportationrelated practices are only "Often Practiced," indicating that while students are aware of eco-friendly commuting options like walking, biking, or carpooling, external limitations—such as infrastructure, accessibility, and convenience—may hinder full implementation. Additionally, students are highly engaged in online environmental advocacy and peer influence, yet participation in physical activities like clean-up drives or school-based environmental projects occurs less frequently.
5. the proposed recommendations for strengthening carbon footprint education and promoting sustainable practices among Novo Ecijano students aim to address both the awareness and the behavioral aspects of environmental responsibility. While students already demonstrate a strong understanding of sustainability concepts and show a high level of commitment to reducing their carbon footprint, there remains a need for enhanced engagement through practical applications, institutional support, and accessible infrastructure. By establishing student-led environmental clubs, integrating experiential learning into the curriculum, improving sustainable campus infrastructure, launching incentive programs, and providing financial assistance to low-income students, these strategies would ensure a more inclusive and actionable approach to sustainability. Ultimately, these efforts would empower students not only to deepen their environmental literacy but also to translate their knowledge into tangible actions that contribute to a more sustainable and climate-conscious community.

Recommendations

1. Considering the demographic profile of students, particularly those from lower-income households and urban areas, it is recommended to create more inclusive and accessible environmental programs. Schools and local governments should collaborate to offer environmental education initiatives that are affordable and convenient, ensuring all students, especially those from disadvantaged backgrounds, can participate. This could involve offering virtual environmental workshops, school-based sustainability projects, and community initiatives that reduce barriers to participation.
2. While students demonstrate a strong understanding of carbon footprints and environmental issues, it is essential to enhance the connection between theoretical knowledge and real-world applications. Schools should integrate hands-on learning opportunities such as sustainability challenges, waste reduction initiatives, and energy conservation projects that allow students to apply their knowledge in practical settings. This could help bridge the gap between awareness and action, reinforcing behavior-driven interventions.
3. To translate students' strong intentions to reduce their carbon footprint into sustained behaviors, it is vital to support their efforts with the necessary infrastructure. Schools should improve campus sustainability through initiatives such as more accessible recycling bins, energy-efficient facilities, and designated spaces for sustainable transportation like bike racks or carpool areas. Such improvements would facilitate the adoption of eco-friendly practices and help students implement their intentions more easily.
4. Given the students' strong commitment to environmental advocacy, it is recommended to establish student-led environmental clubs or advocacy groups. These groups could organize campaigns, projects, and activities such as clean-up drives and awareness workshops. By providing students with leadership roles in these initiatives, schools can empower them to take active roles in fostering sustainability within their communities and beyond.
5. To ensure that sustainability efforts are inclusive and equitable, schools should consider offering financial assistance or incentives for low-income students to participate in environmental programs. This could involve providing subsidies for transportation to sustainability events, funding for eco-friendly school projects, or offering rewards for students who consistently practice environmentally responsible behaviors. These efforts would ensure that all students, regardless of economic background, have the opportunity to contribute to a sustainable future.

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