

Promoting Sustainable Development Goal 12 through no plastic policy implementation as perceived by environmental science students

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Abstract

Plastic production and consumption has been a rising topic and a pressing global challenge considering its impact to the environment. Plastic wastes are among the five major global wastes coming under increasing environmental scrutiny. The continuous production of plastics on land especially the single-use plastics have adverse effects as transported through the marine environment. But despite being a problem for decades, it is evident that the threat posed by plastic pollution is not abating. Hence, in consolidated efforts and enhanced holistic approaches to prevent worsening the situation, the United Nations was prompted to formulate the Sustainable Development Goals (SDG) that prioritize the sustainability of our planet for all. Among these is SDG 12: Responsible Consumption and Production, which aims to implement a ten-year framework of programs on sustainable consumption and production (SCP) that emphasizes the cutting of plastic wastes and adopting to sustainable practices. In the Philippines, the third-ranking contributor to plastic pollution, government and non-government agencies are exerting continuous effort to promote SDG 12. To join this endeavor towards sustainability, the present study intends to investigate the promotion of SDG 12 through No Plastic Policy Implementation in a premiere private higher education institution in a province in the Philippines as perceived by Environmental Science students. The study will employ the quantitative research design and data will be collected through a researcher-made instrument that shall undergo validity and reliability tests. The findings of the study will form the basis for crafting an institutional policy of banning single-use plastics to promote SDG 12 among its constituents.

Keywords: plastic pollution, SDGs, no plastic policy, environmental science, Philippines

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1. Introduction

Plastic production and consumption have been a rising topic and a pressing global challenge considering its impact on the environment. It is in the first five major global wastes to come under increasing environmental scrutiny (Geyer et al., 2017). Several models estimate that between 0.8 and 30 million metric tons of plastic wastes reached the ocean and other aquatic environment (Borrelle et al., 2020; Lau et al., 2020; Meijer et al., 2021). The continuous production of plastics on land especially the single-use plastics have adverse effects as transported through the marine environment. These include but are not limited to ingestion of different species on toxic plastics that adds to their mortality rate and destruction of natural reservoir that can lead to contamination of seafood with implications for food safety and loss of livelihoods of those that rely on ecosystem health like tourism, fishing and other possible source of income that may be taken from our natural resources (Conchubhair et al, 2019; Honingh et al., 2020).

However, despite being a problem for decades, it is evident that the threat posed by plastic pollution is not abating. Hence, renewed and consolidated efforts and enhanced holistic approaches with sincere commitments are needed from the different sectors to prevent the worsening of the situation. This prompted to the formation of Sustainable Development Goals (SDG) that prioritizes the sustainability of our planet for all (United Nations, 2020). One of the identified SDG is Responsible Consumption and Production or SDG 12 which aims to implement a ten-year framework of programs on sustainable consumption and production (SCP) that emphasizes the cutting of plastic wastes and adopting sustainable practices (Chan et al., 2018).

The Philippines is the third-ranking contributor to plastic pollution worldwide after China and Indonesia (Schacter & Karasik, 2022). This created major consequences on the islands of the country in which affects the ocean and marine industries that are vital to the economy. In the community level, clogged drainage systems are one of the problems that threatens the sanitation and livelihood of the locals particularly during wet season (Braganza, 2017). Though plastics industry provides low-cost that benefits middle-income consumers, it cannot be denied that insufficient solid waste management grapples the country with the unsustainable plastic production (The World Bank, 2021).

Due to the pressing concern, Philippine government agencies and non-government agencies are exerting continuous effort to promote SDG 12. One of the landmark laws of the country is Republic Act 9003 or Ecological Solid Waste Management Act of 2001, a community-centered approach to waste and resource management systems. The country also considers January as Philippines' zero waste month, a high time to educate the locals of the zero-waste approach. Furthermore, various cities and municipalities in the Philippines have started their initiatives to attain and promote SDG 12 through no plastic policy specifically banning single-use or what they deemed as unnecessary plastics (Alegado, 2020). For instance, the Department of Education (2020) in Cagayan Valley released a regional memorandum on the prohibition of the use of single-use plastic in all schools. Also, there are several Higher Education Institutions (HEI) like the Philippine Normal University, Siliman University, and De La Salle University that are now implementing the banning of single-use plastics in their respective campuses in support of SDG 12 of the United Nations.

With the ongoing initiatives of no plastic policy in the school level, the researchers investigated the perception of the environmental science students of Silay Institute in the academic year 2022-2023 regarding the implementation of no plastic policy in the institution. The result of this study will be baseline data in crafting an institutional policy of banning single-use plastics from promoting SDG 12 among its constituents.

Research Questions - The study investigated the perception of environmental science students of A.Y. 2022-2023 in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 when they are taken as whole and when grouped according to their demographics. Specifically, it answered the following research questions: What is the profile of the respondents according to the following variables: sex, program, and type of residence. What is the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 in terms of basis of implementation of the policy and scope of the policy? Is there a significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy to promote SDG 12 when the respondents are grouped according to demographic profile?

Importance of the Study - The results of this study revealed the perception of the environmental science students on the implementation of no plastic policy to promote the sustainable development goal 12. Moreover, the results provided the baseline data for the crafting an institutional policy of banning single-use plastics to promote SDG 12 among its constituents.

2. Methodology

Local and Time of the Study - The study was conducted in Silay Institute, Inc., a medium-sized private higher education institution in Central Philippines, Province of Negros Occidental, City of Silay during the first semester of the academic year 2022-2023.

Data Collection Method - A 25-item researcher-made instrument with two parts was used to collect the research data. The first part of the instrument contains the basis in the implementation of no plastic policy. The second part determined the scope of no plastic policy. The research survey instrument was validated by three experts in the field of Science. Moreover, the validity of instrument has a result of 0.98, which means that the survey questions were found to be valid using the criteria of Content Validity ratio (CVR). After the validation of the survey instrument, a reliability test was conducted on thirty environmental science students who were considered non-respondents of the actual study. It was found reliable using Cronbach's Alpha with a score of 0.95, indicating that the survey questionnaire has a good internal consistency. After the validity and reliability testing, the instrument was administered to the 263 first year BEEd, BSBA, BSOA, BSAIS and second year BSCS who were determined through stratified random sampling. After the data collection, the survey questionnaire through google forms was closed and was treated with confidentiality upholding the rights of the research subjects. The information gathered was then analyzed.

Data Analysis - The researchers used the descriptive comparative analyses. Mean was used to determine the level of perception of environmental science students in the no plastic policy implementation. One-Way ANOVA was used to determine the significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 when grouped according to different programs. Independent Samples T-test was used to determine the significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 when grouped according to type of locality and sex.

Ethical Considerations - The researchers secured the informed consent of the respondents. They were informed that their participation in this study is voluntary, and they have the right to withdraw if they feel uncomfortable in the process of gathering information from them. Also, they were assured of full confidentiality. No information that discloses the respondents' identity was released or published without their specific consent to the disclosure. The materials that contained the raw information derived from them were disposed of after data processing within a given period.

3. Results and Discussions

3.1 Perception of Environmental Science Students in the Implementation of No Plastic Policy

Table 1 showed that, as a whole, the level of perception of environmental science students in the implementation of No Plastic Policy is acceptable (M= 4.40, SD=0.51). This signifies that the implementation of no plastic policy is a need in the campus as perceived by the respondents. In terms of the Basis in the Implementation of No Plastic Policy, the level of perception is highest among female (M=4.45; SD=0.67) BEEd (M=4.58; SD=0.59) students living in rural areas and lowest among male (M=4.44; SD=0.70) BSBA students living in the urban (M=4.41; SD=0.72). On the other hand, in terms of the Scope of No Plastic Policy, the level of perception on the no plastic policy implementation is highest among female (M=4.37; SD=0.72) BEEd (M=4.54; SD=0.61) and BSAIS (M=4.54; SD=0.66) students and lowest among male (M=4.33; SD=0.73) BSBA (M=4.10; SD=0.79 students).

Table 1

Perception of environmental science students in the implementation of no plastic policy

Items	Basis in the Implementation of No Plastic Policy			Scope of No Plastic Policy			Overall Level of Perception		
	M	SD	Int	M	SD	Int	M	SD	Int
Gender									
Male	4.44	0.70	A	4.33	0.73	A	4.37	0.49	A
Female	4.45	0.67	A	4.37	0.72	A	4.40	0.52	A
Program									
BEEd	4.58	0.59	HA	4.54	0.61	HA	4.56	0.39	HA
BSBA	4.20	0.75	A	4.10	0.79	A	4.13	0.59	A
BSOA	4.50	0.72	A	4.35	0.71	A	4.41	0.47	A
BSAIS	4.50	0.72	A	4.54	0.66	HA	4.52	0.49	HA
BSCS	4.44	0.66	A	4.40	0.80	A	4.39	0.55	A
Type of Locality									
Urban	4.41	0.72	A	4.40	0.75	A	4.37	0.55	A
Rural	4.53	0.60	HA	4.40	0.66	A	4.45	0.42	A
Whole	4.43	0.70	A	4.39	0.71	A	4.40	0.51	A

Legend: HA= Highly Acceptable; A=Acceptable

The findings have drawn similar results to the study of Molloy et al. (2022), which shows that males are unlikely to support environmental activities such as reducing plastic wastes compared to women and students living in urban areas have live their lives seeing wastes become a huge problem towards achieving sustainability due to its rapid economic development (Zhang et al., 2020). The day-to-day practice of using plastics in packaging and in business in particular has positively or negatively influenced the mindset of BSBA respondents. One example of which was the study conducted by Walker (2021), who found out that businessmen were highly motivated to reduce single-use plastic food packaging, but less willing to pay for sustainable alternatives.

3.2 Difference in the level of perception on the implementation of no plastic policy when respondents are grouped according to sex

Table 2 revealed that there is no significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 between male (M = 4.37) and female students (M = 4.40) with a p-value of 0.670 at 0.05 level of significance. The result suggests that the students' sex has no influence in the level of perception of no plastic policy implementation as a means of promoting sustainable development goal 12 (SDG 12). The findings conform to the study of Sharma (2020) that implies both male and female have an equally acceptable level of perception towards the implementation of No Plastic Policy.

Table 2*Level of perception on the implementation of no plastic policy according to gender*

	Mean	t-value	p-value	Interpretation
Male	4.3743	-0.427	0.670	Not Significant
Female	4.4048			

Note: the difference is significant at $p \leq 0.05$

3.3 Level of perception on the implementation of no plastic policy according to program

Table 3 showed that there is a significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 among BEEd (M=4.5573), BSBA (M=4.1268), BSOA (M=4.4095), BSAIS (M= 4.5225) and BSCS (M= 4.3911) programs with a p-value of 0.000 at 0.05 level of significance. To determine where the significant difference lies, a Post-Hoc Tukey Test was conducted. It was revealed that BEEd students significantly have a higher level of perception compared to other programs being studied. Supporting the findings are some pieces of literature that have mentioned the participation of pre-service teachers in various environmental conservation and practices such as recycling and banning of single-use plastics (Nguyen, 2022; Lualhati, 2019; Candan & Erten, 2015).

Table 3*Level of perception on the implementation of no plastic policy according to program*

	Mean	f-value	p-value	Interpretation
BEEED	4.5573			
BSBA	4.1268			
BSOA	4.4095	8.652	0.000	Significant
BSAIS	4.5225			
BSCS	4.3911			

Note: the difference is significant at $p \leq 0.05$

3.4 Level of perception on the implementation of no plastic policy according to type of residence

Table 4 revealed that there is no significant difference in the level of perception of environmental science students in the implementation of No Plastic Policy at Silay Institute as a means to promote SDG 12 between students living at urban areas (M = 4.37) and students living at rural areas (M = 4.44) with a p-value of 0.285 at 0.05 level of significance. The result suggests that regardless of type of locality, environmental science students have equal level of perception towards no plastic policy implementation. This means that usage of plastics is already part of our daily lives and so the students regardless of where they live have an equal grasp of what is happening in our society, particularly on our wastes. However, the study of Yang (2020) revealed that people who live in urban areas are more exposed to wastes and its impacts compared to its counterpart. This means that rural residents lack awareness of the impacts of environmental pollution on health especially the single-use plastics, which may create risks and vulnerability within the rural environment and the livelihood of these residents.

Table 4*Level of perception on the implementation of no plastic policy according to type of residence*

	Mean	t-value	p-value	Interpretation
Urban	4.3731	-1.072	0.285	Not Significant
Rural	4.4451			

Note: the difference is significant at $p \leq 0.05$

4. Conclusion

The findings of this study established that the environmental science students positively perceive the no plastic policy and that they support its implementation as a means to promote SDG 12. The implementation is

deemed most acceptable by Bachelor of Elementary Education female students residing in rural areas. Meanwhile, the level of perception on the implementation of no plastic policy was significantly different in terms of course or program. The implementation has the highest perceived acceptability for the Bachelor of Elementary Education students and the lowest among Bachelor of Science in Computer Science students. This implies that students who pursue education might have higher awareness and feel more need to address environmental concerns. Moreover, the high level of perceived acceptability of the students imply a potential of the policy being acceptable for the entire institution. This further suggests that the institution should be in a position to consider the drafting of the promotion of SDG 12 through the implementation of no plastic policy in the campus. Finally, the results revealed that the environmental science students are committed towards the sustainable development goals particularly in the responsible consumption and production through the banning of single-use plastics which underscores the importance of addressing the rising concerns in the environment particularly the pollution brought about by plastic consumption.

Recommendation - The researchers recommend that the school administrators consider the drafting of the no plastic policy to be implemented in the campus as a means to promote the sustainable development goal 12 that can be a leeway towards the pursuit of education for sustainable development.

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