

Environmental Awareness and Education: A Key Approach to Solid Waste Management

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ABSTRACT

Knowledge and awareness about solid waste management should be an integral part of the educational mission of any institution. The study determined the environmental awareness and knowledge of solid waste management (EA and SWM) among college students, their littering attitudes and practices (LAP), and the relationship between awareness of solid waste management and littering attitudes and practices at the University of Perpetual Help System-DALTA Las Piñas Campus. The study followed the descriptive method of research and made use of a survey questionnaire. Descriptive statistics and Chi-Square Test were utilized in the treatment of data gathered from the study. The results revealed that there is a significant relationship between awareness of SWM and LAP. The study concludes that despite the high status of awareness expressed by the students concerning SWM, it is not consistent with their littering attitudes and practices. Thus, it is recommended that an environmental education program on solid waste management be done in the university to initiate conservation actions as well as programs that will involve the whole school community in environmental stewardship.

KEYWORDS

Environmental Science, environmental awareness, solid waste management, littering attitudes and practices, descriptive, Philippines

INTRODUCTION

Solid wastes are undesirable substances that are left after they are used once. These are also the useless and unwanted products in the solid state derived from the activities of and discarded by society. With the growing population and increasing development, the amount of waste generated continues to increase. Modern lifestyle has led to more acute waste problems, convenience products generally require more packaging, careless habits associated with greater affluence lead to greater quantities of waste, as demonstrated by discarded wrappers from the inevitable fast food outlets, and the modern day waste contains a higher proportion of non-degradable materials such as plastics. The waste is consists of 45% food waste, 24% plastic, 7% paper, and 6% iron. Despite the massive amount and complexity of waste produced, the standards of waste management in the Philippines are still poor, as indicated by litter at the roadside, drains clogged up with rubbish, and rivers filled with filthy garbage. With this problem on waste management, the capacity of the environment to sustain life will be reduced. If the present rate of solid-waste production goes on without effective supervision and disposal methods, there will be a substantial negative impact on the quality of the environment in which people live. Furthermore, the lack of awareness and knowledge among people on solid waste management issues and being ignorant about the effect that improper solid waste management has will definitely worsen the problem.

A study on the knowledge, attitudes, awareness status and behavior concerning solid waste management in Malaysia showed the students' knowledge, attitudes, awareness status and behavior concerning SWM were moderate. Desa et. al. (2012), in their study, assessed the attitudes and behavior concerning SWM among first year students at the Universiti Kebangsaan Malaysia and found out that 60% of the students had positive attitude towards re-use, recycling and reduce. Results also indicated that all of the students showed high levels of practices and responsibility regarding SWM. In another study conducted by Enero (2011) among high school students in Midsayap, Cotabato, results showed that there is no significant difference in the level of awareness on solid waste management between

year levels. The first year and fourth year students are very aware, third year and second year students are moderately aware of solid waste management based on the overall mean score of 47.66.

FRAMEWORK

Theory of reasoned action (TRA) and theory planned behavior (TPB) were used in this study on environmental awareness and education as a key approach to solid waste management as a framework in understanding, explaining, and predicting behavior. These theories are also useful as a guide for designing intervention strategies to maintain or change a particular behavior. The theory is based on the assumption that individual behavioral intentions are directly associated with their attitudes. The theory of reasoned action views an individual's intention to perform or not to perform as an immediate determinant of the action. This behavioral intention has two determinants: 1) attitude towards the behavior and 2) subjective norms. The beliefs related to attitude towards the behavior are called behavioral beliefs while normatif beliefs are for the subjective norms. The theory planned behavior views an individual's determination is influenced by attitude, social support and perceived behavioral control. Thus, it is best to examine human behavior when participation decisions are voluntary and under an individual control. Therefore, this theory is suitable to predict a student's intent to participate in a specific behavior in relation to solid waste management.

OBJECTIVES OF THE STUDY

The study determined the environmental awareness and knowledge of solid waste management (EA and SWM) among college students, their littering attitudes and practices (LAP), and the relationship between awareness of solid waste management and littering attitudes and practices at the University of Perpetual Help System-DALTA Las Piñas Campus.

METHODOLOGY

The Research Design

The study used a qualitative research design where purposeful sampling was utilized. The design involved a survey consisting of questions about students' awareness and knowledge of solid waste management which was

administered to 384 college students enrolled in Environmental Science subject across year levels for Second Semester School Year 2014-2015.

The Participants

The 384 participants were the students across year levels i.e., from the first year to the fourth year level taking up Environmental Science for the Second Semester of SY 2014-2015. The participants were students taking up BS Computer Science, BS Hotel and Restaurant Management, BS Tourism, BS Mass communication, BS Psychology, and BS Information Technology.

The Instrument

The questionnaire was divided into two parts – (a) eight (8) questions that required the students to pick from two (2) options, and (b) 25 item Likert questionnaire about littering practices and attitudes consisting of five (5) options. The first set of questions involved finding out the students' awareness of solid waste management. On the other hand, the Likert questionnaire was asked to determine the kind of littering practices and attitudes the students demonstrated on matters about managing solid wastes. The survey questionnaire was based on the previous study of Desa et al. (2012), but some items were modified according to the Philippine setting. The questionnaire was validated by three (3) educators of Environmental Science based at the University of the Philippines at Los Baños, College, Laguna.

Data Analysis

Descriptive statistics and Chi-Square Test were used to analyze the data for this study. The descriptive statistics involved the determination of percentages corresponding to awareness of solid waste management. These statistics were used to describe the population and the general performance of the population.

RESULTS AND DISCUSSIONS

A total of 384 college students enrolled in Environmental Science subject for Second Semester School Year 2014-2015 completed the survey questionnaire forms. The participants were across year levels from first year to fourth year taking up BS Computer Science, BS Hotel and Restaurant

Management, BS Tourism, BS Mass communication, BS Psychology, and BS Information Technology.

Table 1 presents the environmental awareness and knowledge of the students regarding solid waste management.

Table 1. Environmental Awareness and Knowledge of Students on Solid Waste Management

Indicator	Awareness of SWM	Percentage
Do you have an idea of solid waste management?	yes	85.4
Is solid waste a problem in the University of Perpetual Help System Dalta Las Piñas Campus?	no	51.8
What is your opinion about the janitors who sweep the wastes of UPHS Dalta Las Piñas Campus?	satisfactory	82.8
What is your opinion about solid waste disposal in UPHS Dalta Las Piñas Campus?	satisfactory	68.2
What is your opinion about solid waste treatment in UPHS Dalta Las Piñas Campus?	satisfactory	73.2
What is your opinion about the solid waste system of UPHS Dalta Las Piñas Campus?	satisfactory	74.2
How many times per week waste is disposed from UPHS Dalta Las Piñas Campus?	twice	48.7
Do you reuse waste items in the school?	no	71.1
Do you feel any dirtiness in the school due to solid waste?	no	60.4

Results showed that more than half of the students (85.4%) had high awareness status concerning SWM. But there is still quite a number of them (14.3%) that have low awareness status. Further, the general population thinks that SWM is not a problem in the university at 51.8%. They also have a “satisfactory” opinion on the janitors who sweep the wastes in the campus (82.8%), on solid waste disposal in the university (68.2%), on the solid waste treatment in the university (73.2%), and on the SWM in the university at an average of 74.2%. The waste disposal in the university is down twice per week at 48.7%. They do not reuse waste items in school at 71.1%, and they do not feel dirtiness in the school due to solid waste at 60.4%.

Table 2 presents the littering attitudes and practices of the students.

Table 2. Littering Attitudes and Practices of the Students

Indicator	Littering Attitudes and Practices	Percentage
I do not care if someone throws litter.	Sometimes	42.4
I assume waste is not useful and should be thrown away.	Sometimes	44
I do not care if my friends throw trash into drains.	Never	33.6
After I take a snack, I leave my litter inside the room.	Never	45.6
After a checked report, I use the back page as scratch.	Sometimes	34.1
I use candy wrappers and other scrap materials for my project.	Sometimes	32.3
I use the blank pages of a used notebook to make a new notebook.	Sometimes	38
I tell my classmates to dispose of their litter properly.	Sometimes	41.9
Seeing someone litter upset me.	Sometimes	38
If I see paper or wrappers on the ground /floor, I put them in the trash can/bin.	Sometimes	47.7
I throw fruit peelings anywhere in the school because these are biodegradable.	Never	46.1
I litter.	Sometimes	29.2
I do not buy junk food in the canteen to avoid trash accumulation.	Sometimes	39.1
I use disposable cups, plates, forks and spoons during school parties/activities.	Sometimes	36.7
I do not want to bring home any project submitted in some subjects.	Sometimes	46.1
I commend my classmates who throw trash into bins.	Sometimes	49
If the trash is overflowing in the trash bin, I keep my trash in my bag/pocket.	Sometimes	34.1
I am aware about the trash I contribute in the school.	Sometimes	40.4
I throw left-over food in the trash can instead of bringing it home for my pet.	Sometimes	33.6
I am careless about handling laboratory equipment and glass wares leading to breakages in the laboratory.	Never	40.9
I am fond of smashing empty pet bottles because these are useless already.	Never	32.8

Indicator	Littering Attitudes and Practices	Percentage
I love to eat a lot of candies, chocolates and biscuits all at the same time.	Sometimes	36.7
I like the concept of solid waste management.	Sometimes	34.1
I feel guilty every time I see the overflowing of solid wastes in our school.	Sometimes	42.4
I am not aware of the consequences of poor solid waste management.	Sometimes	39.3

Despite the high status of awareness expressed by 85.4% of the students concerning SWM, it is not consistent with their littering attitudes and practices. This probably indicates behavioral problem, which means that students are not practicing environmentally responsible behavior (an inconsistent and highly unbalanced strong “knowing” but weak “doing”) and also because of attitude problems, lack of enforcement, lack of monitoring and the students did not fully understand their roles and responsibilities in environment protection. These findings show that students’ attitudes were affected by their education, which supports the idea that education plays, or can play a role in developing people’s attitudes towards the environment (bin Hamad Al-Rabaani & Al-Mekhlafi, 2009). The general population has a “sometimes” behavior for most of the littering attitudes and practices. The general finding that the students do not reuse waste items indicates a lack of awareness among the students with regard to what solid waste materials can be recycled as well as the importance of recycling. The results of the study are in contrast with the results of the study conducted by Desa et. al. (2012). In their study, all of the students showed high levels of practices and responsibility regarding SWM. It could probably be that the transfer from attitudes to behavior can also be affected by lifestyle. Many people, while professing to “correct” attitudes to the environment, are not ready to change their lifestyle in ways that might mean sacrificing certain forms of leisure and comfort for the sake of the environment. Another study has also found a weak and inconsistent relationship between environmental attitudes and behavior, usually attributable to a reluctance to give up the comforts of modern life (Diekmann & Preisendorfer (1998).

Table 3 presents the relationship between awareness of solid waste management and littering attitudes and practices.

Table 3. Relationship Between Awareness of SWM and Littering Attitudes/Practices

Pair	df	χ^2 -value	p-value	Decision on H_0	Conclusion
Item 1 and Littering Attitudes	1	536.80	0.00	Reject H_0	Significant
Item 2 and Littering Attitudes	2	530.75	0.00	Reject H_0	Significant
Item 3 and Littering Attitudes	1	471.14	0.00	Reject H_0	Significant
Item 4 and Littering Attitudes	1	163.94	0.00	Reject H_0	Significant
Item 5 and Littering Attitudes	1	257.13	0.00	Reject H_0	Significant
Item 6 and Littering Attitudes	3	1620.41	0.00	Reject H_0	Significant
Item 7 and Littering Attitudes	2	141.70	0.00	Reject H_0	Significant
Item 8 and Littering Attitudes	2	797.70	0.00	Reject H_0	Significant
Item 10 and Littering Attitudes	1	71.83	0.00	Reject H_0	Significant

Decision Criteria: Reject H_0 if p-value \leq 0.05. Otherwise, accept H_0 .

As can be perceived in Table 3, a significant relationship between awareness of solid waste management and littering attitudes and practices can be observed in all items. Hence, the null hypothesis, which states there is no significant relationship between awareness of solid waste management and littering attitudes and practices, is rejected.

CONCLUSIONS

The study examined the environmental awareness and knowledge of solid waste management (EA and SWM) among college students across levels and found out their littering attitudes and practices (LAP). The study showed that there is a high awareness status of the respondents concerning SWM. However, it is apparent that there is the necessity to develop student's attitudes and willingness to reduce problems related to SWM. An environmental programme at the university must be developed and rooted in the belief that the process of paying attention to the environment will have the greatest impact if it becomes an integral part of the educational mission of the institution. This would mean offering a connection between what happens in the classroom with what is happening immediately outside. Environmental protection should be the responsibility of all students and employees.

RECOMMENDATIONS

The following recommendations were formulated grounded on the findings of the study, and the conclusions were drawn:

1. It is recommended that an environmental education program on solid waste management be done in the university to initiate and expand recycling practices and other conservation actions.
2. With regard to good behaviors of not littering, it is recommended that the university creates programs that will involve the whole school community in environmental stewardship and to put more effort into raising students' awareness by awareness campaigns that can bring about considerable changes in the attitude and perception of them towards SWM.

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Gunning Fog Index: 11.83
Flesch Reading Ease: 40.01
Grammar Checking: 96/100
Plagiarism: 1%