

A STUDY ON THE ASSESSMENT OF THE KNOWLEDGE, ATTITUDE AND AWARENESS ON SOLID WASTE MANAGEMENT OF COLLEGE STUDENTS

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ABSTRACT

Through a survey questionnaire, this study determined the environmental awareness and knowledge on solid waste management (EA and SWM) and assessed littering attitudes and practices (LAP) of 384 college students. Using descriptive statistics, results revealed that for EA and SWM, the general population indicates idea on SWM at 85.4%, SWM is not a problem at 51.8%, “satisfactory” opinion on the janitors, on solid waste disposal, on the sewage treatment and on the SWM in the university at an average of 74.6%, the waste disposal in the university is twice weekly at 48.7%, waste items not reused at 71.1% and dirtiness not felt due to solid waste at 60.4%. The “sometimes” behavior for the not littering attitudes and practice indicates an occasional practice of important pro-behavior for not littering. Students do not reuse waste items indicates lack of awareness with regard to what solid waste materials can be recycled. It is recommended that a program on solid waste management be developed in the university to initiate and expand recycling practices and other conservation actions. On good behaviors of not littering, it is recommended that the university creates programs that will involve the whole school community in environmental stewardship.

Keywords: Environmental awareness, environmental stewardship, littering attitudes and practices, recycling practice, solid waste management.

INTRODUCTION

Solid wastes are undesirable substances which 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 consists of 45% food waste, 24% plastic, 7% paper and 6% iron (Desa et. al, 2012). 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 behaviour concerning solid waste management in Malaysia showed that the students' knowledge, attitudes, awareness status and behaviour concerning SWM were moderate (Desa, et. al, 2012). In order to encourage students as well as employees, awareness on managing solid waste in the campus and programs to promote attitude change and sustainable environmental practices must be carried out. Another study on the assessment on awareness of and views about solid waste management among high school students in Gurage zone, Wolkite town, Ethiopia conducted by Ahmedin (2014) revealed that generally, there is no significant difference among the students in terms of awareness and views on issues related to solid waste management. Moreover, in a case study conducted at a Chilean university on environmental attitudes and behaviors of college students, results showed that significant differences were found between students pursuing diplomas related to the environment and those who are not. Likewise, in a study conducted by Enero (2011) among high school students in Midsayap, Cotabato, results showed that there is no significant difference on the level of awareness on solid waste management between year levels. The first year and fourth year students are very aware while third year and second year students are moderately aware on solid waste management based on the overall mean score of 47.66.

Hence, an environmental programme should form part of any school's mission. There should be a strong connection with what happens in the classroom with what is happening immediately outside.

LITERATURE REVIEW

Theory of Reasoned Action (TRA) (Fishben & Azten, 1975) and Theory of Planned Behaviour (TPB) (Azten, 1985) were used in this study as a key approach to solid waste management as well as a framework in understanding, explaining and predicting behaviour. These theories are also useful as a guide for designing intervention strategies to maintain or change a particular behaviour. The theory is based on the assumption that individual behavioural intentions are directly associated with their attitudes. The theory also views an individual's intention to perform or not to perform as an immediate determinant of the action. This theory has two determinants: 1) attitude towards the behaviour, and 2) the subjective norms. The beliefs related on attitude towards the behaviour are called behavioural beliefs while normative beliefs are for the subjective norms. The theory planned behaviour views an individual's determination is influenced by attitude, social support and perceived behavioural control. Thus, it is best to examine human behaviour 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 behaviour in relation to solid waste management.

In the light of this situation, this study was conducted in order to:

1. identify the current waste collection and waste data at the University of Perpetual Help System-DALTA Las Piñas Campus;
2. determine the awareness on solid waste among college students of the University of Perpetual Help System-DALTA Las Piñas Campus; and
3. assess the attitudes and behaviour concerning SWM among college students of the University of Perpetual Help System- DALTA Las Piñas Campus.

At the collegiate level, such awareness is important so that an educational program on management of solid waste will be addressed properly so that it can be applied to the local communities.

METHODOLOGY

The Research Design

The study used a descriptive type of research design where purposive 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 on solid waste management. On the other hand, the Likert questionnaire was asked to determine the kind of littering practices and attitudes the students demonstrate 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 was used to analyze the data for this study. The descriptive statistics involved the determination of percentages corresponding to awareness on solid waste management. This statistics was used to describe the population and the general performance of the population.

RESULTS

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 reflects the awareness status of the students concerning SWM.

Table 1. Awareness Status Concerning Solid Waste Management

Item	Frequency	Percent
1. Idea on SWM	No = 55 Yes = 328	14.3 85.4
2. Is SWM a problem in UPHSD?	No = 199 Yes = 183	51.8 47.7
3. Opinion on Janitors	Non-Satisfactory = 64 Satisfactory = 318	16.7 82.8
4. Opinion on SW disposal	Non-Satisfactory = 118	30.7

in UPHSD	Satisfactory = 262	68.2
5. Opinion on SW treatment in UPHSD	Non-Satisfactory = 101 Satisfactory = 281	26.3 73.2
6. Opinion on SW management in UPHSD	Non-Satisfactory = 96 Satisfactory = 285	25.0 74.2
7. Frequency of waste disposal per week	Once = 53 Twice = 187 Thrice = 117	13.8 48.7 30.5
8. Reuse waste items in school	No = 273 Yes = 107	71.1 27.9
9. Feel dirtiness in school due to solid waste	No = 232 Yes = 124	60.4 32.3

. Meanwhile, Table 2 shows the littering attitudes and practices of the students.

Table 2. Littering Attitudes and Practices

Item	Frequency	Percent
1. I do not care if someone throws litter.	Never = 93 Seldom = 77 Sometimes = 163 Often = 24 Always = 15	24.2 20.1 42.4 6.3 3.9
2. I assume waste is not useful and should be thrown away.	Never = 60 Seldom = 74 Sometimes = 169 Often = 44 Always = 24	15.6 19.3 44.0 11.5 6.3
3. I do not care if my friends throw trash into drains.	Never = 129 Seldom = 90 Sometimes = 104 Often = 35 Always = 12	33.6 23.4 27.1 9.1 3.1
4. After I take a snack, I leave my litter inside the room.	Never = 175 Seldom = 76 Sometimes = 86 Often = 25 Always = 9	45.6 19.8 22.4 6.5 2.3
5. After a checked report, I use the back page as scratch.	Never = 43 Seldom = 45 Sometimes = 131	11.2 11.7 34.1

	Often = 56	14.6
	Always = 87	22.7
6. I use candy wrappers and other scrap materials for my project.	Never = 96	25.0
	Seldom = 91	23.7
	Sometimes = 124	32.3
	Often = 37	9.6
	Always = 17	4.4
7. I use the blank pages of a used notebook to make a new notebook.	Never = 42	10.9
	Seldom = 71	18.5
	Sometimes = 146	38.0
	Often = 67	17.4
	Always = 45	11.7
8. I tell my classmates to dispose of their litter properly.	Never = 26	6.8
	Seldom = 68	17.7
	Sometimes = 161	41.9
	Often = 62	16.1
	Always = 54	14.1
9. Seeing someone litter upset me.	Never = 26	6.8
	Seldom = 65	16.9
	Sometimes = 146	38.0
	Often = 75	19.5
	Always = 56	14.6
10. If I see paper or wrappers on the ground/floor, I put them in the trash can/bin.	Never = 23	6.0
	Seldom = 82	21.4
	Sometimes = 183	47.7
	Often = 59	15.4
	Always = 21	5.5
11. I throw fruit peelings anywhere in the school because these are biodegradable.	Never = 177	46.1
	Seldom = 49	12.8
	Sometimes = 96	25.0
	Often = 34	8.9
	Always = 10	2.6
12. I litter.	Never = 100	26.0
	Seldom = 99	25.8
	Sometimes = 112	29.2
	Often = 34	8.9
	Always = 17	4.4
13. I do not buy junk food in the canteen to avoid trash accumulation.	Never = 45	11.7
	Seldom = 96	25.0
	Sometimes = 150	39.1
	Often = 38	9.9
	Always = 41	10.7

14. I use disposable cups, plates, forks, and spoons during school parties/ activities.	Never = 35 Seldom = 64 Sometimes = 141 Often = 81 Always = 48	9.1 16.7 36.7 21.1 12.5
15. I do not want to bring home any project submitted in some subjects.	Never = 54 Seldom = 81 Sometimes = 177 Often = 45 Always = 9	14.1 21.1 46.1 11.7 2.3
16. I commend my classmates who throw trash into bins.	Never = 30 Seldom = 51 Sometimes = 188 Often = 61 Always = 31	7.8 13.3 49.0 15.9 8.1
17. If the trash is overflowing in the trash bin, I keep my trash in my bag/pocket.	Never = 33 Seldom = 62 Sometimes = 131 Often = 70 Always = 68	8.6 16.1 34.1 18.2 17.7
18. I am aware about the trash I contribute in the school.	Never = 36 Seldom = 55 Sometimes = 155 Often = 65 Always = 54	9.4 14.3 40.4 16.9 14.1
19. I throw left-over food in the trash can instead of bringing it home for my pet.	Never = 82 Seldom = 68 Sometimes = 129 Often = 51 Always = 34	21.4 17.7 33.6 13.3 8.9
20. I am careless about handling laboratory equipment and glasswares leading to breakages in the laboratory.	Never = 157 Seldom = 55 Sometimes = 98 Often = 34 Always = 23	40.9 14.3 25.5 8.9 6.0
21. I am fond of smashing empty pet bottles because these are useless already.	Never = 126 Seldom = 74 Sometimes = 125 Often = 28 Always = 11	32.8 19.3 32.6 7.3 2.9

22. I love to eat a lot of candies, chocolates and biscuits all at the same time.	Never = 63	16.4
	Seldom = 80	20.8
	Sometimes = 141	36.7
	Often = 41	10.7
	Always = 37	9.6
23. I like the concept of solid waste management.	Never = 11	2.9
	Seldom = 37	9.6
	Sometimes = 131	34.1
	Often = 75	19.5
	Always = 113	29.4
24. I feel guilty every time I see the overflowing of solid wastes in our school.	Never = 21	5.5
	Seldom = 57	14.8
	Sometimes = 163	42.4
	Often = 59	15.4
	Always = 68	17.7
25. I am not aware of the consequences of poor solid waste management.	Never = 81	21.1
	Seldom = 85	22.1
	Sometimes = 151	39.3
	Often = 31	8.1
	Always = 20	5.2

*With highest frequency

DISCUSSION

Results in Table 1 showed that more than half of the students (85.4%) had high awareness status concerning SWM. However, there are still quite a number of them (14.3%) which have low awareness status. Further, the general population think that SWM is not a problem in the university at 51.8%. Moreover, the general population have a “Satisfactory” opinion on the janitors, and on SW disposal, SW treatment and SW management in the university at an average of 74.6%. The population also think that waste disposal in the university is done 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%. Although the results showed high levels of awareness on SWM in general, it can be seen from Table 1 that 71.1% of the students think that waste items in school are not reused. This could probably be due to the fact that the students are not aware that waste reduction and reuse are far more effective ways of reducing the impact of waste in the school environment compared to recycling.

Despite the high status of awareness expressed by 85.4% of the students concerning SWM, it is not consistent with their attitude and practice as shown in Table 2. This probably indicates behavioral problem which means that students are not practicing environmentally responsible behavior. This also means that there is an inconsistent and highly unbalanced strong “knowing” but weak “doing” as well as attitude problems, lack of enforcement and lack of monitoring. Likewise, it seems that the students do not fully understand their role and responsibilities as far as environment protection is concerned. 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 (Ahmed & Mohammed Al- Mekhlafi,

2009). Results also indicate that the general population has a “sometimes” behavior for the not littering attitudes and practice. The “sometimes” response for the not littering attitudes and practice could probably indicate an occasional practice of important pro-behavior for not littering. The results are therefore supported by TRA and TPB. It shows that the behavioural intentions of the students are directly associated with their attitudes and their intent to participate in a specific behavior in relation to solid waste management. The general finding on the students that do not reuse waste items might also indicate lack of awareness with regard to what solid waste materials can be recycled as well as the importance of recycling. The results of the study also support the findings of Hines, Hugerford and Tomera (1986), wherein the level of consistency between environmental attitudes and behavior is affected by a person’s knowledge and awareness, public verbal commitment and his/her sense of responsibility. Moreover, the transfer from attitudes to behavior can also be affected by lifestyle. This would mean that 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. Other 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 & Preisendorfe, 1998).

CONCLUSIONS

The study examined the environmental awareness and knowledge of solid waste management (EA and SWM) among college students across levels and assessed their littering attitudes and practices (LAP). The study showed that students generally have favorable views about solid waste management. 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. Environmental protection should be the responsibility of all students and employees.

It is recommended that an environmental education program on solid waste management be developed in the university to initiate and expand recycling practices and other conservation actions. 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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