Practices of Freshman Education Students on Solid Waste Segregation at their Homes

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Abstract – Education for sustainable development entails building a culture among people; it is much a matter of imparting knowledge and developing skills as it is shaping attitudes and practice are adapted on campuses especially as these relate to sustainable waste management. The emphasis on recycling activities as a sustainable waste management strategy has represented a shift in paradigm from the conventional collection and waste disposal practices. Most recent studies recommend the re-use and recycling of solid waste. The study determined the practices of Basilan State College Freshmen Education students on Solid Waste Segregation at home. This study used a descriptive research design using a survey questionnaire. The study used a random sampling procedure, where 165 education students served as respondents of the study. Results showed that: the majority of the respondents (70.6%), "sometimes" practice waste segregation; and only 29.4% of them, "always" practice it at their homes. Majority of the respondents' family (73.5%) "sometimes" practice waste segregation and only (26.5%) "always" practice it at their homes. The practice of the Education students and the practice of the family members of the students on solid waste segregation are moderately significant correlated ($\infty = 0.344$). This study concludes that, if a member of a family practices solid waste segregation at home, other members of the family will also practice solid waste management.

Keywords – Science Education, Solid Waste Segregation at Home, Practices Solid Waste Segregation, Descriptive-Survey, Philippines.

I. INTRODUCTION

Solid waste is a by-product of human and animal activities. These can be classified in terms of their original use (such as packaging waste), the material (glass, paper, or plastics), their physical properties (combustible or biodegradable), their origin (domestic, commercial, industrial or agricultural), and the safety parameters (hazardous or radioactive). Although human and animal excreta often end up in the solid waste stream the term, solid waste does not generally include such waste material [1]. The high rate of urbanization, the rising standard of living and rapid development accompanied by population growth have resulted in the increased generation of solid waste in urban areas. Unfortunately, this has not been accompanied by an equivalent increase in the capacity of the relevant urban authorities to deal with the problems.

In many countries, recycling activities have gained increasing attention as a means of protecting the environment. It has been argued that it offers one of the most sensible solutions both economically and ecologically for managing solid waste disposal [2]-[3]. The enhancement of waste recycling activities saves resources and foreign exchange by reducing on the purchase of raw materials, lowers the costs of the final disposal of the residues, produces cheaper goods that help low-income households, and creates new jobs [4]. Despite these advantages, recycling activities have not solved the solid waste problems in the key cities of our country. The emphasis on recycling activities as a sustainable waste management strategy has represented a shift in paradigm from the conventional collection and waste disposal practices. Most recent studies recommend the re-use and recycling of solid waste [5]-[6]-[7]-8]. However, for any recycling activity to take place, the waste has to be separated. One of the problems in waste management is the absence of a culture of sorting waste by type at

the generation points. This results in the mixing of all kinds of waste. Recycling may demand other special solutions, but the separation of solid waste at the source is the starting point.

In developing countries like the Philippines, the management of solid waste has become a problem because environmental laws are not well implemented thus making the risk of unhealthy disposal of solid waste. Most people do not know about the Ecological Solid Waste Management Act of 2000 (Republic Act 9003). Residents of Metro Manila generate so much garbage that they are responsible for one-fourth of the country's daily output of solid waste, according to the Department of Environment and Natural Resources (DENR).

Environment Secretary Ramon Jesus Paje said Metro Manila residents had become such prolific litterbugs that the supposedly local problem of household garbage had become a national concern. Uncollected trash that clogs waterways and drainage systems is one of the major causes of floods and disease outbreaks whose effects could be felt beyond the capital, Paje stressed. From flooding to dengue, from polluted rivers and creeks to mountains of trash, from the unnecessary death of fishes that accidentally swallowed plastic bags in the seas to global warming, garbage is the common denominator.

Theoretical Framework

Theory of reasoned action (TRA) and theory planned behavior (TPB) was used in this solid waste management programme 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 assumptions 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) the subjective norms. The beliefs related to attitude towards the behavior are called behavioral beliefs whilst normative beliefs are for the subjective norms [9]. 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 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 [10].
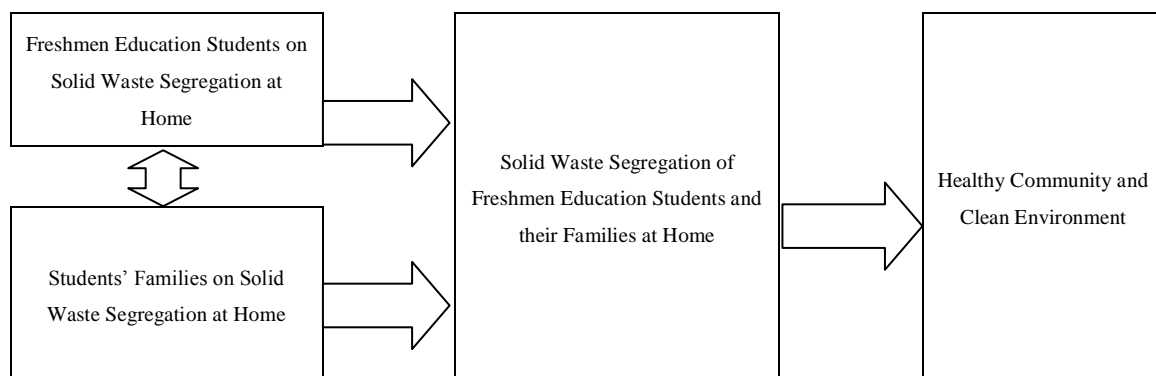
Conceptual Framework

Fig. 1. Practices of Freshmen Education Students on Solid Waste Segregation at their Homes.

This study is the practice of Basilan State College Freshmen Education Students and their families (A.Y. 2018-2019, First Sem.) on Solid Waste Segregation at home. The practices of Freshmen Education students on

Solid Waste Segregation and their families are measured. The significant relationship between the student and his families is determined. The implications of this study are a healthy community and a clean environment.

Statement of the Problem

This study was conducted to determine the practices of Freshmen Education students and their families on Solid Waste Segregation at their homes. Specifically, it sought to find answers to the following questions:

1. What is the socio-demographic profile of the student-respondents?

2. What is the level of practices of Freshmen Education students on Solid Waste Segregation at home?

3. What is the level of practices of Freshmen Education students' families on Solid Waste Segregation at home?

4. Are there a significant relationship on the student and his family on solid waste segregation at home?

II. RESEARCH DESIGN AND PROCEDURE

This study used the descriptive research design using a questionnaire to gather the needed data. Gay (1976) defined the descriptive research design as involving the collection of data in order to test hypotheses or to answer questions concerning the current status of the subject of study. According to Travers (1978), the descriptive method is employed to describe the nature of the situation, as it exists at the time of the study and to explore the causes of particular phenomena.

Research Setting

Basilan State College is the only tertiary public school in Basilan Province. It is located at Sumagdang barangay, Isabela City, Basilan Province. The client of the school is of different tribes like Yakans, Tausugs, Samals, Visayan, and Chavacanos. It is a ten-minute ride from the main town of Isabela City. The total population of students enrolled every semester is between 3,000 to 3,500 students. The total area of the main campus is 4 hectares.

Respondents and Sampling Procedure

The subjects of the study were the Freshmen Education students of Basilan State College, who were officially enrolled in the first semester academic year 2018-2019. The study used a random sampling procedure where 165 education students served as respondents of the study. The data drawn from the questionnaire will be used to gather their socio-demographic profile, the level of practices of Freshmen Education students on Solid Waste Segregation and disposal at their residence, and the level of practices of the students' families on Solid Waste Segregation at their residence.

Research Instrument

A two-section survey questionnaire will be used in this study. According to Best and Kahn (1998), a questionnaire is used when factual information is desired. It gives an opportunity for the person administering the instrument, to establish rapport, explain the purpose of the study, and explain the meaning of items that may not be clear.

Section one (1) will draw information about the socio-demographic profile of the Education students of Basilan

State College, which include: age, gender, tribes and year level.

Section two (2) of the questionnaire will determine the level of practices of Freshmen Education students and the level of practices of students' families on Solid Waste Segregation at their residence. The association between student practice and his family members on solid waste segregation will be determined. The practice questions on Solid Waste Segregation were based on their practices at home. The questions were answer able with "always", "sometimes" and "never".

The Validity of the Instrument

The instrument was validated using the jury method. Three (3) experts in Educational Management were asked to evaluate the questionnaire items for suitability. Each was asked to rate an item as being:

(1) Not Suitable.

(2) Needs Revision.

(3) Suitable.

Items judged by at least two (2) out of three (3) raters was deemed as suitable, will be retained. An analysis of variance (ANOVA) or F – Test was conducted for significant differences on their ratings on the suitability of instrument items, at $\alpha = 0.05$. An F – Value of 1.334 revealed that there were no significant differences on their ratings of the items' suitability.

The Instrument Reliability

The Alpha (Cronbach), a model of internal consistency reliability, which is based on the average inter-item correlation, is the model adopted in this study. Internal consistency reliability varies from a low of 0 to a high of 1.0 and represents the proportion of the variance in the respondents' scores that are attributable to the true differences on the psychological construct (DeVellis, 1991). The following guidelines have been proposed by DeVellis (1991) regarding acceptable reliabilities for research instrument scales:

Below .60	Unacceptable
Between .60 and .65	Undesirable
Between .65 and .70	Minimally acceptable
Between .70 and .80	Respectable
Between .80 and .90	Very Good
Much Above .90	Very Good, considering shortening the scale

An instrument with a Cronbach Alpha value of below 0.60 would mean that its reliability is unacceptable. Alpha value of between 0.60 and 0.65 would signify that its reliability is undesirable. An Alpha of between 0.65 to 0.70 would be interpreted as minimally acceptable. A value of between 0.70 and 0.80 implies that the instrument's reliability is respectable. Alpha value of 0.80 and 0.90 indicates that reliability is very good. An instrument is considered having good reliability, and with the possibility of shortening its scale, is that with a Cronbach Alpha of much above 0.90.

A pre-testing of the questionnaire will be conducted on 30 students of the college, who were not included as re-

-spondents of the study. An instrument reliability analysis will then be conducted based on the data that will be obtained. The result of such a test was that the Cronbach Alpha value was 0.82, which means that the reliability of the instrument was very good.

Data Gathering Procedure

Permission from the College President was requested by the researcher to conduct this study. Granted the request, the questionnaires were distributed to the Education students of Basilan State College A.Y. 2018-2019, first semester. Finally, with all the needed data required in my study ready, the data were analyzed. Then it was presented in a tabular and textual form to facilitate analysis and interpretation.

Statistical Techniques

To determine the demographic profile of the Education students the frequency and percentage were used.

To determine the level of practices of Education students on Solid Waste Segregation the frequency and percentage were used.

To determine the level of practices of students' families on Solid Waste Segregation the frequency and percentage were used.

To determine the relationship between student practice and his family members the Pearson Product Moment Correlation was used.

III. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the analysis and interpretation of data gathered based on the research problems. The presentation of data is in the order arranged according to the statements of problems in an attempt to answer them congruently.

The first research question that this study sought to answer was, "What are the Profile of the Respondents in terms of age, gender, and tribes?"

Table 1. The Distribution of the Respondents According to their Profile (N = 165).

Profile	Frequency	Percentage
Age		
15	5	2.9
16	50	30.3
17	53	32.4
18	29	17.7
19	19	11.7
20	8	5
Total	165	100

As can be gleaned from the table above, the majority of the respondents were 17 years of age (32.4%) and 16 years of age (30.3%). The youngest was 15 years of age (2.9%) and the oldest was 20 years of age (5 %).

Table 2. The Distribution of the Respondents According to their Profile (N = 165).

Profile	Frequency	Percentage
Gender		
Male	44	26.5
Female	121	73.5
Ethnicity		
Chavacano	73	44.1
Yakan	29	17.6
Tausug	34	20.6
Bisaya	24	14.7
Samals	5	2.9
Total	165	100

Table 2 shows, that there are 44 male respondents that are 26.5% and 121 female respondents which are 73.5%. On ethnicity there are 73 chavacano which is 44.1%, 29 Yakan which is 17.6%, then 34 Tausug which is 20.6%, 24 Bisayan which is 14.7% and 5 Samal which is 2.9%. There are more female respondents than male. The chavacano tribe is the greater number of respondents while the Samal is the least number of respondents.

The second research question that this study sought to answer was, "What is the level of practices of Freshmen Education students on Solid Waste Segregation at their home?"

In practice, the one hundred sixteen (70.6%) respondents answered "sometimes" and forty-nine (29.4%) respondents answered "always". The Freshmen Education students do not practice on a regular basis the segregation of solid waste material at their residence.

The emphasis on recycling activities as a sustainable waste management a strategy has represented a shift in paradigm from the conventional collection and waste disposal practices. Most recent studies recommend the re-use and recycling of solid waste [11]-[12]-[13]-[14]. However, for any recycling activity to take place, the waste has to be separated. One of the problems in waste management is the absence of a culture of sorting waste by type at the generation points. This results in the mixing of all kinds of waste. Recycling may demand other special solutions, but the separation of solid waste at the source is the starting point.

Immediate focus should be placed on promoting waste reduction, reuse and recycling of waste. Segregation of waste will enable people to divert recyclables and bio-degradable items from going to the landfill. Informal waste collectors should be included and made part of formal recycling system [15].

Moningka (2000) [16] argues that coordination within different sectors of solid waste management will ensure efficiency and emphasis should be placed on the involvement of other actors besides the municipalities. Hence, a coordinated approach to reduce, recover and recycle should be undertaken.

The third research question that this study sought to answer was, "What is the level of practices of Freshmen Education students' families on Solid Waste Segregation at home?

On students' families,the majority of the respondent's family that is one hundred twenty-one (73.5%) "someti-

-mes" practice waste segregation and only forty-four (26.5%) "always" practice it at their home*s*.

According to Tikka et al (2000)[17], environmental knowledge does not necessarily lead to improving practice. There is no clear association between a person's attitude and behavior. Sometimes changing attitude may stimulate change in behavior and sometimes behavior change may influence attitude. Although it may seem self-evident that a change in behavior could be beneficial for a person or a group of persons but according to Hubley (1993)[18] and Naido et al.(1994)[19], it is difficult to encourage such change because according to social psychology theory of behavior change, an individual's attitude to a specific action and their disposition to adopt it is influenced by beliefs; motivation which comes from the person's values and drives; and the influences of social norms or significant people around them.

The fourth research question that this study sought to answer was, "Is there a significant relationship between student and his family on solid waste segregation at home?

The practice of the Education students and the practice of the family members of the students on solid waste segregation are moderately significant correlated (∞ = 0.344).

Ekere et al (2009) [20] found that the awareness of recycling activities is important in household behavior toward solid waste separation. They found that the awareness of recycling activities in the area significantly influences the separation of solid waste in a household. This could be because people know that they will be able to get a ready market for their sorted waste. On the other hand, the results, show that having yard, the age of respondent and household size have no significant effects on the household decision to separate solid waste or not.

IV. CONCLUSION

There is a need to emphasize the protection of the environment in the curriculum at all levels of the education system. The kindergarten could be the foundation for environmental education. Emphasis should also be placed on increasing environmental awareness and a sense of accountability among students particularly in handling waste. The high level of awareness translates into high likeliness of participation in waste management, such as collection, recycling of waste disposal will reduce the large amount of solid waste dump in the landfill. Possibly, everyone would be separating waste if schools were exposed to environmental education through the school curriculum. Policymakers could consider offering tax concessions to industries involved in developing reusable products that will reduce solid wastes intended for disposal. The industries engage in solid waste materials recycling and reuse should compensate solid waste materials transported to them. Solid waste management (SWM) must continue to be the most urgent concern and task at homes and business firms to create a clean and healthy environment.

V. RECOMMENDATIONS

The College of Education should incorporate subjects on solid waste management in science subjects to increase the percentage of the practice of Solid Waste Segregation at their homes.

1. The school should intensify extension services information drive on Solid Waste Management to the different barangay in the locality.

2. The local government should set up recycling facilities so that household residence will be motivated to se-

-gregate their solid waste materials.

3. The businessman must be motivated to put up a buying station and send ambulance buyer in the barangays to encourage people to segregate their solid waste and earn additional income.

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AUTHOR'S PROFILE

Dr. Haipa Abdurahim-Salain was born on February 27, 1976. She finished her college degree at Basilan State College where she took Bachelor of Arts in Political Science and graduated in 2003. She finished her Master's Degree and Doctor's Degree in the same school in 2011 and 2015 respectively. She is a certified accreditor of the accrediting agency of Chartered Colleges and Universities in the Philippines (AACCUP), Inc. She had presented a research paper entitled "Teaching Performance of the Basilan State College Faculty: A differentiation by personal and professional Attributes", during the First International Multidisciplinary Research Conference on August 19-21, 2016 at Kay Hotel and Residences, Angeles City. Salain had attended various seminars such as the Research Capability building on December17 17-18, 2016 at Marcia Business Hotel, Zamboanga City; National Youth Congress 2016, a Simulation of Parliament to Formulate a Youth Legislative Agenda for Sustainable Development on December 14-16, 2016 at Romulo Hall, Teachers' Camp, Baguio City, Philippines.