OPEN ACCESS JOURNALS
Indiana Journal of Multidisciplinary Research
Abbriviate Tittle- Ind J Multi Res
ISSN *(Online)*- 2583-3820
Journal Homepage Link- https://indianapublications.com/Journals/IJMR

INDIANA PUBLICATIONS
PRODUCTIVE AND QUALITY RESEARCH

Research Article

Volume-02|Issue-02|2022

Exploring Students' Awareness and Practices towards Solid Waste Management

Dirk Diestro*

Faculty, Capiz State University, Roxas City, Capiz, Philippines

Article History
Received: 10.04.2021
Accepted: 18.04.2022
Published: 30.04.2022

Citation
Diestro, D. (2022). Exploring Students' Awareness and Practices towards Solid Waste Management. *Indiana Journal of Multidisciplinary Research*, *2*(2), 44-48.

Abstract: Proper solid waste management is one of the main concerns in every institution, with the large amounts of expended resources, scarcity and waste problem arises which causes environmental pressure and negative impacts on humanity. With that, this study primarily aims to determine the awareness and practices of students toward solid waste management. Specifically, this study sought to ascertain the students' extent of awareness as to solid waste management, the students' solid waste management practices as a whole, and in terms of segregation, reduce, reuse, recycle and, and disposal and, the significant relationship between the students' awareness and practices as to solid waste management. Hence, it was determined that the students were aware of the solid waste management policies and protocols and they moderately practice the protocols in general, however, in terms of specific practices, waste segregation, reusing, and proper waste disposal were moderately practiced, on the other hand, students often practice the reduce and recycle solid waste management practices. More so, this study determined that there was a moderate positive correlation and a significant relationship between the students' awareness and practices of solid waste management. Thus, the reorientation of the Ecological Solid Waste Management policies is recommended.

Keywords: *Disposal, Recycle, Reduce, Reuse, Segregation*

INTRODUCTION

Large amounts of resources are expended in a growing community with thousands of population, causing environmental pressure and negative impacts. Coupled with the growing population year by year is the growing demand for goods and services which contributes to the increase in solid waste generation. It has been noted that managing solid waste is one of the major challenges faced by the government in the 21st century. Thus, mishandling of solid wastes and poor implementation of waste management may cause a greater problem in the future (UN HABITAT, 2010).

Solid waste management is a necessary regulation in any community. Solid wastes are garbage materials from both animal and human activities that are unwanted and unusable. Also, solid wastes are by-products of industrial, residential, and commercial activities, and may be handled in a variety of ways. Improper management of solid waste has a detrimental effect on both humans and the ecosystem. Burning of wastes and open dumping lead to pollution of the environment with harmful gases and soil pollution through leachates (Iqbal, 2020). The continuous promotion of environmental management and achieving sustainable development goals have prompted policymakers and technical experts to adopt an appropriate system for managing solid waste and protecting the environment (Patil & Dilip, 2017).

In this regard, the need for the reuse and recycling of material wastes has increased over the years due to rapid population increase and urbanization (Ferronato & Torretta, 2019). In pursuant to environmental protection and proper management of waste disposal, waste minimization through the implementation of solid waste management following reduce, reuse, and recycling (3Rs) including the prevention and disposal phases are being advocated by experts and policymakers.

With the aforesaid advocacy, the researcher was prompt to explore the awareness and practices of students in regard to solid waste management. Thus, the result of this study may serve as the basis for fostering the implementation and awareness of students towards waste disposal and waste prevention practices.

This study primarily aims to determine the awareness and practices of students toward solid waste management. Specifically, this study sought to ascertain the students' extent of awareness as to solid waste management, the students' solid waste management practices as a whole, and in terms of segregation, reduce, reuse, recycle and, and disposal and, the significant relationship between the students' awareness and practices as to solid waste management.

This study was anchored on the Behavior Change Model of Hungerford and Volk (1990) which the respondents' reasoning was directly linked with the belief that if people were better informed, they would become more aware of environmental problems and consequently, would be motivated to behave in an environmentally responsible manner. Thus, when knowledge increases, environmentally favorable decisions lead to responsible environmental actions (Akintunde, 2017).

***Corresponding Author:** Dirk Diestro

METHODOLOGY

Descriptive survey research was employed in this study to ascertain the awareness and practices of students toward solid waste management. The independent variable of this study was the extent of awareness of the students and the dependent variable was the students' solid waste management practices.

The respondents of this study were the 364 randomly selected students taken from the total population of 6,606 of Higher Education students enrolled at Capiz State University - Roxas City Campus during the first semester of the academic year 2022-2023.

Before commencing this study, a communication letter was sent to the University President, Campus Administrator, and the Deans of the different colleges seeking permission to conduct this study. Upon approval, pilot testing commenced determining the reliability and validity of the researcher-made questionnaires. Upon securing that the questionnaires were reliable and valid, administration of the survey questionnaire among the respondents followed in the form of a google survey.

On the extent of students' awareness of solid waste management, the researcher used a researcher-made questionnaire with 10-item benchmarks where the mean from the scores was computed and interpreted. This survey questionnaire underwent content validation and reliability testing, resulting in 0.79 Cronbach's alpha coefficient and which denotes the reliability of the survey questionnaire. This study used the scale and interpretation presented as 1.00 – 1.80 (Very Low), 1.81 – 2.61 (Low), 2.62 – 3.42 (Moderate), 3.43 – 4.23 (High), and 4.24 – 5.00 (Very High).

On the students' solid waste management practices, the researcher used a researcher-made questionnaire with 20-item benchmarks where the mean from the scores was computed and interpreted. This survey questionnaire underwent content validation and reliability testing, resulting in 0.88 Cronbach's alpha coefficient and which denotes that the survey questionnaire was reliable. This study used the scale and interpretation presented as 1.00 – 1.80 (Least Practiced), 1.81 – 2.61 (Less Practiced), 2.62 – 3.42 (Moderately Practiced), 3.43 – 4.23 (Often Practiced), and 4.24 – 5.00 (Always Practiced).

This study used mean to analyze the descriptive data, on the other hand, one-way analysis of variance, and Pearson's moment correlation was used in analyzing the inferential data collected set at 0.05 level of significance.

RESULTS AND DISCUSSIONS

On the Extent of Students' Awareness of Solid Waste Management

On the extent of students' awareness of solid waste management, the result reveals a "high" extent of awareness among students regarding solid waste management policies. Further, the result specifically reveals that there was a "high" extent of students' awareness with regard to the identification of biodegradable wastes and non-biodegradable wastes. On the other hand, a "moderate" awareness among students as to waste containers' color code was identified. Thus, this implies that students have adequate knowledge of the policies and implementation standards of solid waste management, however, further clarification and information drive as to proper waste handling, sanctions in the violation of solid waste management policies, proper waste disposal, and color codes of waste containers should be strengthened. The result corroborates with Sarino (2012) findings, which disclose that a well profound awareness of solid waste management creates change in how garbage looks. This awareness leads to a great deal of solid waste management implementation which brings a huge impact in attaining environmental sustainability.

Table 1: Students' Awareness of Solid Waste Management

Benchmark Statements	Mean	Verbal Interpretation
1. There is an RA 9003 or the Ecological Solid Waste Management Act of 2000.	3.82	Aware
2. Proper handling of waste.	3.16	Neither Aware nor Not Aware
3. Waste segregation practices.	3.79	Aware
4. Garbage collection schedule.	3.82	Aware
5. Fines/ sanctions for any violation of RA 9003.	2.96	Neither Aware nor Not Aware
6. Identification of biodegradable wastes from non-biodegradable wastes.	3.87	Aware
7. Reusing and recycling practices.	3.51	Aware
8. Waste management ordinances.	3.66	Aware
9. Proper waste disposal.	3.13	Neither Aware nor Not Aware
10. Waste containers' color code.	2.55	Neither Aware nor Not Aware
Grand Mean	**3.43**	**Aware**

***Corresponding Author:** Dirk Diestro

Indiana Journal of Multidisciplinary Research
Abbriviate Tittle- Ind J Multi Res
ISSN *(Online)*- 2583-3820
Journal Homepage Link- https://indianapublications.com/Journals/IJMR

On Students' Solid Waste Management Practices

On students' solid waste management practices, the result reveals that students "moderately practice" the ways how solid waste should be managed. Specifically, practices such as reducing and recycling wastes were "often practiced" by the students, however, segregation, reusing, and disposing of wastes were found to be "moderately practiced" by them underscoring the disposal practices. The result implies that students' practices toward solid waste management were not religiously undertaken which drives out poor sanitary practices, increases solid waste volume and may contribute to pollution and the spread of diseases. The result of this study conforms with the findings of Marello and Helwege (2014) which reveal that practicing solid waste management protocols eliminates adverse impacts on the environment and human health, thus, learning the correct methods of handling the waste generated has become essential.

Table 2: Students' Solid Waste Management Practices

Solid Waste Management Practices	Mean	Verbal Interpretation
Segregation	3.33	Moderately Practiced
Reduce	3.46	Often Practiced
Reuse	3.38	Moderately Practiced
Recycle	3.63	Often Practiced
Disposal	3.19	Moderately Practiced
Grand Mean	**3.40**	**Moderately Practiced**

On the segregation practices of the students, the result reveals that students "moderately practiced" solid waste segregation. Further, the result presents that students "often practice" the segregation of biodegradable and non-biodegradable wastes, however, they "moderately practiced" the segregation of non-harmful wastes from toxic and hazardous wastes. This implies that students are practicing waste segregation, however, they were confused in identifying waste classifications pertaining to non-harmful wastes from toxic and hazardous wastes which leads to mishandling of toxic and hazardous wastes since what they only often practice was the segregation of biodegradable and non-biodegradable wastes. The result of this study affirms the conclusions of Pollisco (2012) which entails that segregating waste is non-negotiable thus, it plays a vital role in improving health and protecting the environment by putting wastes in order since waste segregation benefits all and makes the community a sustainable and livable one.

On Solid Waste Reducing Practices

On solid waste-reducing practices, the result reveals that students "often practice" solid waste reduction underpinning the students' act of borrowing, sharing, and/or renting things that are needed occasionally which they "often practice" but underscoring the habit of bringing water in reusable water bottles than buying water in one-used plastic bottles which was "moderately practiced" by the students. The result implies that students were somehow taking their part in efficiently using the available resources and lessening resources' consumption volume. The result of this study conforms with the findings of Ambayic (2014) which reveal that consciously buying things brings down the amount of waste disposed of which subsequently lessens the generated size of trash.

On Solid Waste Reusing Practices

On solid waste reusing practices, the result reveals that students "moderately practice" the reusing of resources. Students "often practice" reusing jute and plastic bags and "moderately practice" reusing washable food containers. The result implies that students do practice reusing however in a minimal way which gives at least a progressive move in lessening waste materials. The result of this study affirms with findings of Griffiths (2010) which entails that starting a waste-reusing practice is an act of saving energy and resources that would have been used to make a new product and results in fewer products going into the rubbish bin and ending up in the landfill.

On Solid Waste Recycling Practices

On solid waste recycling practices, the result revealed that students "often practice" recycling highlighting the statement that says "making decors out of plastic wrappers and other colorful waste materials" which the students "often practice" however, the idea of initiating generation of funds from waste material is underpinned in this result. The result implies that students were into recycling which reflects that they are conserving resources and making new things out of the less usable materials that they have. The findings of Griffiths (2010) reveal that students who were highly engaged in recycling save landfill space and rescue resources by making another new product directly helped the sustainability of the environment by creating a practical market for recycled products than consuming

***Corresponding Author:** Dirk Diestro

new resources which the result of this study conforms with.

On Solid Waste Disposal Practices

On solid waste disposal practices, the result reveals that students "moderately practice" proper waste disposal practices underscoring the statement "Disposing of hazardous/toxic/special wastes such as electronic wastes with labels on the waste bag." The result implies that a considerable number of students were practicing proper waste disposal, however, there is a must to strengthen its implementation in order to obtain an increased involvement among the students to lessen the hazardous effect of mismanagement of waste both for the environment and for the community as a whole. Thus, the result conforms with the findings of Madrigal & Oracion (2018) which disclose that indiscriminate disposal of waste to the environment may affect human health and the environment.

On the Relationship of Students' Awareness and Practices of Solid Waste Management

On the relationship between students' awareness and practices of solid waste management, the result reveals that there was a moderate positive correlation and a significant relationship between students' awareness and practices of solid waste management. The result implies that the level of awareness towards solid waste management positively affects the practices of students which further entails that if the students are well informed about solid waste management protocols, there is a high possibility that they can very well practice waste segregation, reducing, reusing, recycling, and proper waste disposal accordingly. The result of this study corroborates the findings of Desa, Kadir & Yusooff (2012) which reveal that the level of consistency between attitude towards the environment and behavior is affected by a person's knowledge and awareness.

Variable	Pearson Correlation	Sig. (2-tailed)	Remarks
Students' Awareness and Practices as to Solid Waste Management	0.590	0.000	Significant

As this study was anchored on the Behavior Change Model of Hungerford and Volk (1990), it reveals that students' level of awareness in solid waste management directly influenced their practices. Hence, the researcher affirms that if students or the community as a whole were better informed, they would become more aware of environmental problems and consequently, would be motivated to behave in an environmentally responsible manner. Thus, when knowledge increases, environmentally favorable decisions lead to responsible environmental actions (Akintunde, 2017).

CONCLUSION

With the aforesaid results, the researcher concludes that the students were aware of the solid waste management policies and protocols, thus, these students can be more responsive in the wide implementation of Republic Act 9003. In terms of the solid waste management practices of students, it was concluded that students moderately practice the protocols in general, however looking into the aforementioned practices, waste segregation, reusing, and proper waste disposal was moderately practiced, on the other hand, students often practice the reduce and recycle solid waste management practices, hence, it is deemed that students are in a progressive phase of submitting themselves in exhibiting solid waste management practices. Lastly, this study determined that there was a moderate positive correlation and a significant relationship between the students' awareness and practices as to solid waste management.

Recommendation

With the abovementioned conclusions, the researcher recommends the reorientation of Republic Act 9003 or otherwise known as the Ecological Solid Waste Management Act of 2000 in the form of seminars, training, or even its integration in the class discussion when applicable to increase the students' level of awareness and to provide enough information with regards to the aforesaid act. Also, the researcher encourages student organizations to lead campaigns and give more information about proper solid waste management practices.

Acknowledgments

The researcher would like to express his heartfelt thanks and gratitude to Dr. Ma. Dorothee J. Villarruz, Dr. Hazel D. Joaquin, Dr. Joel C. Villaruz, Dr. Ian B. Arcega, Dr. Miraluna T. Sabid, Dr. Ma. Consuelo Y. Yap, to the faculty of the Roxas City Main Campus and to those who in one way or another extends their extramiles of support in conducting this study.

REFERENCES

1. Akintunde, E. (2017). Theories and concepts for human behavior in environmental preservation. *Journal of Environmental Science and Public Health, 1*(2), 120-133.
2. Ambayic, A. S. (2014). *Household Practices on Solid Waste Management. Undergraduate Thesis*. Mindanao State University - Maigo School of Arts and Trades.

***Corresponding Author:** Dirk Diestro

3. Desa, A., Kadir, N. B. A., & Yusooff, F. (2012). Waste education and awareness strategy: towards solid waste management (SWM) program at UKM. Procedia. *Social and Behavioral Sciences, 59* (2012), 47-50
4. Dilip, C., & Patil, D.S. (2017). Zero Waste Management System: Case Study- Kumbarakoppal, Mysore. *International Journal of Engineering Research*.
5. Ferronato, N., & Torretta, V. (2019). Waste Mismanagement in Developing Countries: A Review of Global Issues. *International journal of environmental research and public health, 16*(6), 1060.
6. Griffiths, M. (2010). How to Reduce, Reuse and Recycle Waste in Schools. Retrieved on August 16, 2022, from http://www.ijesd.org/papers/268-CD0082.pdf.
7. Hungerford, H. R., & Volk, T. L. (1990). Changing learner behavior through environmental education. *Journal of Environmental Education, 21,* 8-21.
8. Iqbal, A. (2020). Integrated solid waste and wastewater treatment system: a comprehensive life cycle assessment of potential scenarios for Hong Kong. *Hong Kong University of Science and Technology*
9. Madrigal, D., & Oracion, E. (2018). Solid Waste Management Awareness, Attitude, and Practices in a Philippine Catholic Higher Education. Retrieved on August 16, 2022, from https://www.researchgate.net/publication/327177428_Solid_Waste_Management_Awareness_Attitude_and_Practices_in_a_Philippine_Catholic_Higher_Education_Institution
10. Marello, M., & Helwege, A. (2014). Solid Waste Management and Social Inclusion of Waste Pickers: Opportunities and Challenges. Retrieved on August 6, 2022, from http://www.bu.edu/pardee/files/2014/09/Social-Inclusion-Working-Paper.pdf.
11. Pollisco, W. C. (2012). Assessment of Policy Gaps, Harmonization of Policies and Needs Analysis in the Management of Solid Waste in the Philippines Final Report. Retrieved on August 16, 2022, from http://enrdph.org/wp-content/uploads/2014/05/Final-Report.pdf.
12. Sarino, M. A. O. (2012). Proper Waste Disposal Makes for Disaster-free Communities. Article, Manila Bulletin. Retrieved on August 6, 2022, from http://www.mb.com.ph/proper-waste-disposal-makesfor-disaster-free-communities/
13. UN Habitat. (2010). Information and Monitoring. Retrieved May 30, 2022 from https://unhabitat.org/un-habitat-annual-report-2010

***Corresponding Author:** Dirk Diestro