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Research Article

Awareness and Responsiveness Level on Proper Waste Management at San Pedro Elementary School

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Abstract: This study addresses proper waste management at San Pedro Elementary School in Batangas. Reducing litter and promoting recycling are vital, as these evaluate pupils' awareness and responsiveness. The research employs surveys and interviews to gather data from YES-O and Supreme Pupil Government officers. It assesses pupils' awareness about recycling, waste segregation, and disposal, along with common practices on school premises. Findings reveal knowledge gaps in recycling, waste segregation, and disposal. Recycling practices are lacking, waste segregation is minimal, and disposal is haphazard. Proposed actions include revisiting waste management lessons, enforcing policies, and promoting recycling through training. The study underscores schools as pivotal in waste management awareness. Although limited to the school, it suggests sustainable practices. By enhancing pupils' awareness, this research contributes to a more environmentally conscious community and suggests improved waste management strategies.
Keywords: Waste management awareness, Pupil responsiveness, Recycling practices, Waste segregation, Environmental education.

Introduction

In a world increasingly concerned with the deterioration of our environment and the rapid depletion of natural resources, the significance of proper waste management practices has gained unprecedented attention. Amidst this backdrop, educational institutions emerge as influential players in shaping responsible behaviors that align with environmental stewardship. This study immerses itself in the realm of waste management awareness and responsiveness among the student body of San Pedro Elementary School, located within the Division of Batangas. In an age where sustainable living is synonymous with conscious existence, the urgency to curtail litter, foster recycling, advocate reuse, and adopt source reduction techniques has reached a critical juncture. Achieving these transformative goals necessitates a substantial shift in behavior, and at the core of this paradigm shift lies the efficacy of public awareness and education initiatives.

This research endeavors to evaluate the degree to which pupils at San Pedro Elementary School are cognizant of and receptive to these imperatives of waste management. San Pedro Elementary School emerges as a microcosm reflecting the broader challenges of waste management. As students interact with their immediate environment, their actions contribute, often inadvertently, to the production of waste. This study concentrates on scrutinizing their awareness levels concerning recycling, waste segregation, and appropriate waste disposal methods. Additionally, it seeks to grasp the prevalent practices governing waste management within the school premises. To unravel these intricacies, the research adopts a descriptive methodology, employing surveys and retrospective interviews to glean insights from carefully selected student representatives of the Youth for Environment in School Organization (YES-O) and the Supreme Pupil Government. By gauging their understanding,

behaviors, and attitudes toward waste management, this study aims to pinpoint strengths and pinpoint areas necessitating intervention. The ramifications of the study's findings extend beyond the school's boundaries. These insights possess the potential to guide waste management strategies not only within the educational sphere but also in the broader community. By comprehending the pupils' levels of awareness and responsiveness, this research aspires to contribute to a more enlightened and sustainable approach to waste management.

Proper waste management have the task of reducing litter and promoting recycling, reuse, and source reduction activities. Each one of these activities requires some behavioral change on the part of the public. The vital means for attaining this change is public awareness education. In many cases, solid waste management do not have to "reinvent the wheel." There is an abundance of educational material available. The internet has educational and informational material, most of which can be accessed free of charge. A far larger problem is getting the material into the hands of the public and then getting the public involved in solving solid waste management problems.

Public education and involvement in solid waste management does not have to be extremely costly. However, SWAs need to make a commitment of time and resources for these purposes. The school plays an important role in disseminating information with regards to proper disposal of garbage. It is the best outlet to promote awareness on proper waste management. Pupils need to be conscious of becoming aware on how to sustain the importance of waste management. They need also to be sensible on common practices in implementing proper disposal and segregation of waste.

Thus, it is an imperative quest to assess the awareness and responsiveness of pupils toward proper waste management. Its purpose encompasses generating tangible outputs in the form of diverse activities and strategies to effectively tackle the substantial waste generated within the school grounds. By focusing on recycling, waste segregation, and waste disposal, this research aims to gauge pupils' comprehension and engagement with these vital waste management components. Additionally, the study seeks to uncover prevailing waste management practices at San Pedro Elementary School, providing insights into the current scenario. It's important to acknowledge that this research's scope is delimited by the confines of the school premises, precluding an exploration of waste management practices beyond this realm. In sum, this study's rationale stems from the urgency of fostering waste management awareness among pupils and the subsequent need to refine their responsiveness through targeted interventions.

Literature Review

Education and awareness campaigns play a great part in implementing the proper waste management. Not all people after all are aware that the one piece of waste material they are sending to landfills or incinerators constitutes a greater threat to the environment. Presently, calls to recycle and waste reduction are widely active. And various projects and campaigns are launched every day, adding more noise to the earlier advocacies on proper waste management.

Quantifying the GHG-reduction benefits of waste minimization, recycling and re-use requires the application of LCA tools (Smith *et al.,* 2001). Recycling reduces GHG emissions through lower energy demand for production (avoided fossil fuel) and by substitution of recycled feedstocks for virgin materials. Efficient use of materials also reduces waste. Material efficiency can be defined as a reduction in primary materials for a particular purpose, such as packaging or construction, with no negative impact on existing human activities. At several stages in the life cycle of a product, material efficiency can be increased by more efficient design, material substitution, product recycling, material recycling and quality cascading (use of recycled material for a secondary product with lower quality demands). Both material recycling and quality cascading occur in many countries at large scale for metals recovery (steel, aluminium) and recycling of paper, plastics and wood. All these measures lead to indirect energy savings, reductions in GHG emissions, and

avoidance of GHG generation. This is especially true for products resulting from energy-intensive production processes such as metals, glass, plastic and paper (Tuhkanen *et al.,* 2001).

Widely implemented policies include Extended Producer Responsibility (EPR), unit pricing (or PAYT/Pay As You Throw) and landfill taxes. Waste reduction can also be promoted by recycling programmes, waste minimization and other measures (Miranda *et al.,* 1994; Fullerton and Kinnaman, 1996). The EPR regulations extend producer responsibility to the postconsumer period, thus providing a strong incentive to redesign products using fewer materials as well as those with increased recycling potential (OECD, 2001). Initially, EPR programmes were reported to be expensive (Hanisch, 2000), but the EPR concept is very broad: a number of successful schemes have been implemented in various countries for diverse waste fractions such as packaging waste, old vehicles and electronic equipment. EPR programmes range in complexity and cost, but waste reductions have been reported in many countries and regions. In Germany, the 1994 Closed Substance Cycle and Waste Management Act, other laws and voluntary agreements have restructured waste management over the past 15 years (Giegrich and Vogt, 2005).

In general, existing studies on the mitigation potential for recycling yield variable results because of the differing assumptions and methodologies applied; however, recent studies (i.e., Myllymaa *et al.,* 2005) are beginning to quantitatively examine the environmental benefits of alternative waste strategies, including recycling.

Waste management has become a complex area, legally, technically and commercially. Very few organizations can still rely on the waste collection services provided through local authorities as a complete answer to their waste management obligations. Thus many firms need to identify and contract one or more reputable, licensed, specialist companies for the disposal of their waste, or discharging their legal obligations. A key development in waste management is the focus on preventing the production of waste through waste minimization and the re-use of waste materials through recycling. This links directly to procurement issues, where careful selection of materials, suppliers, process redesign for disassembly and reverse logistics can all reduce the amount of wastes produced or facilitate recycling and re-use. A common misconception is that environmental protection and sustainable initiatives must come at the expense of economic development (El-Haggar, 2007). This is particularly true for managing wastes, a process which depletes natural resources and pollutes the environment if not done correctly. Proper waste management can be costly in terms of time and resources and so it is important to understand what options exist for managing waste in an effective, safe and sustainable manner (El-Haggar, 2007). This is particularly true for organizations which fall into the institutional, commercial and industrial (ICI) sector.

Waste management methods cannot be uniform across regions and sectors because individual waste management methods cannot deal with all potential waste materials in a sustainable manner (Staniškis, 2005). Conditions vary; therefore, procedures must also vary accordingly to ensure that these conditions can be successfully met. Waste management systems must remain flexible in light of changing economic, environmental and social conditions (McDougall *et al.,* 2001; Scharfe, 2010). In most cases, waste management is carried out by a number of processes, many of which are closely interrelated; therefore, it is logical to design holistic waste management systems, rather than alternative and competing options.

Research Questions

The researcher aimed to determine the level of awareness and responsiveness of pupils on proper waste management.

Specifically, it sought answers to the following questions:

1. What is the awareness level of pupils on proper waste management in terms of:

a) recycling,

b) waste segregation and
c) waste disposal?
2. What are the common practices in waste management in terms of:
a) recycling,
b) waste segregation and
c) waste disposal?
3. What are the proposed actions towards proper waste management?

Innovations and Strategies

This study's' innovation is an initiative on proper waste management in school. This focuses on implementing strict practices on proper disposal and management.

Method

a) This is a descriptive type of research which aims to determine the level of awareness and responsiveness of pupils on waste management. The respondents of this study are twenty selected officers from Youth for Environment in School Organization (YES-O) and Supreme Pupil Government.
b) The researcher used data gathering procedures which includes survey method and retrospective interview. The following date gathering tools namely; checklist and interview guide were used to attain the objectives of this study.
c) A survey questionnaire was prepared, validated, distributed, tallied and interpreted to determine the level of awareness and responsiveness of pupils on proper waste management. A retrospective interview follows after accomplishing the survey questionnaire in order to validate and confirm the responses given by the pupils.
d) The researcher utilized frequency, percentage and weighted mean in analyzing the data.

Results and Discussion

This part of the study presents the responses to the research objectives heaved in the research.

Awareness Level of Pupils on Proper Waste Management

Table 1. Pupils' Awareness level on proper waste management

Awareness level	F	%
A. Recycling		
1. I Know the importance of recycling.	9	45%
2. I know how to recycle.	5	25%
3. I know what and when to recycle things.	3	15%
4. I know that garbage can be recycled.	18	90%
5. I know how recycling is helpful to the environment.	15	75%
B. Waste Segregation		
1. I know what is biodegradable materials.	8	40%
2. I know how to identify biodegradable from non-biodegradable.	8	40%
3. I know that non-biodegradable cannot be decomposed in just a year.	3	15%
4. I know the importance of proper waste segregation.	16	80%
5. I practice waste segregation.	3	15%
C. Waste Disposal		
1. I know where to disposed waste.	10	50%
2. I throw my waste anywhere in the school.	1	5%
3. I make sure to read the labels in the trash can before I throw my waste.	5	25%
4. I know the importance of proper waste disposal.	3	15%
5. I know the importance of having a compost pit.	4	20%

Table 1 shows the level of awareness on proper waste management in terms of recycling, waste segregation and waste disposal. It shows that the respondents with a percentage of 15%, in terms of recycling, they don't know what and when to recycle but they know that garbage can be recycled with a percentage of 90%. With regards to waste segregation, only 15% of the respondents know that non-biodegradable cannot be decomposed in just a year.

On the other hand, it seems that 80% of them know the importance of proper waste segregation. When it comes to waste disposal, it merely shows that the respondents throw their waste anywhere in the school with a percentage of 5% however 50% of them know where to disposed waste.

Results shows that in terms of recycling, the respondents are aware that the garbage can be recycled but they are lack of knowledge of what and when to recycle materials. It also shows that the importance of waste segregation is known by the respondents but cannot distinguish that biodegradable will not be decomposed in just a year. When it comes to waste disposal, the respondents know where to disposed waste but throw their garbage anywhere in the school. Data shows that there is a need to design an action for the awareness responsiveness of the pupils on proper waste management.

Common practices on waste management

Table 2. Practices on Proper Waste Management

Practices	WM	Interpretation
1. Recycling		
a. Make use of scratch paper as solution paper.	3.3	Sometimes
b. Make pencil holder from an empty bottle.	1.35	Never
c. Used old newspaper in making projects.	3.95	Very Often
2. Waste Segregation		
a. A model of segregating waste in our room.	1.95	Rarely
b. Make sure that biodegradable and non-biodegradable are properly separated.	2.8	Sometimes
c. Participation in the segregation process of waste after class.	2.85	Sometimes
3. Waste Disposal		
a. Collect waste from each classroom every after class.	3.5	Sometimes
b. Throw waste in proper container.	3.9	Very Often
c. Put plastics in our school compost pit	3.9	Very Often

Data shows that most of the respondents are not practicing recycling process. It also shows that waste segregation is not evident in the school and there is a need for improvement when it comes to waste disposal.

Proposed actions towards proper waste management

It is found out that most of the pupils need lessons that will refresh their knowledge about proper waste management. Also the school should have strict implementation of policies, plans, and programs. Teach the pupils of proper disposal techniques through recycling and segregation.

Plans for Dissemination and Utilization

The researcher came up with the plans of conducting lectures to attain the awareness and responsiveness on proper waste management and also provide training on how to turn all the recyclable waste into a productive one.

Table 3. Action Research Work Plan and Timeline

Activity	Duration	
	From	To
Gathering literature	April 4, 2016	April 8, 2016
Formulating objectives	April 11, 2016	April 22, 2016
Analyzing and drafting literature	April 27, 2017	May 10, 2016
Drafting the introduction	May 16, 2016	May 30, 2016
Identifying the research design and methodology	July 4, 2016	July 15, 2016
Drafting and peer validation of questionnaire	July 18, 2016	July 29, 2016
Distribution and retrieval of questionnaire	Aug. 8, 2016	Aug. 20, 2016
Tallying and interpretation of responses	Sept. 1, 2016	Sept. 16, 2016
Drafting results and discussion	Sept. 26, 2016	October 2, 2016
Drawing conclusions and writing the recommendation	October 3, 2016	October 10, 2016
Finalizing the introduction, review of related literature, results and discussion, bibliography	May 2, 2016	May 13, 2016
Drafting the research blueprint	April 18, 2016	April 29, 2016
Encoding and polishing the entire paper and peer validation of the problem solving blueprint.	May 2, 2016	October 14, 2016
Submission of the action research to the division office and presentation to peers	October 15, 2016	October 26, 2016

Table 4. Target Dates

Target Dates		
End of Project	**First Draft**	**Final Report**
October 14, 2016	July 15, 2016	October 26, 2016

Table 5. Cost Estimates

Item	Cost
Photo Copy of Questionnaires	Php 120.00
Snacks for Respondents	Php 1,000.00
Total	Php 1120.00

Conclusion

In the face of mounting global concerns over environmental degradation and the exhaustion of natural resources, the significance of proper waste management practices has become increasingly evident. Educational institutions emerge as key influencers in molding ecologically aware behaviors and fostering a culture of accountable waste management. This study delved into the realm of waste management awareness and responsiveness among San Pedro Elementary School pupils in Batangas Division.

Findings from the research unveiled a spectrum of awareness and responsiveness levels among pupils concerning proper waste management. While a majority of participants recognized the value of recycling and possessed a rudimentary understanding of waste disposal, notable knowledge gaps emerged, particularly in the realm of waste segregation practices. It became evident that recycling was not being extensively practiced, waste segregation was suboptimal, and unplanned waste disposal was prevalent within the school premises. To mitigate these challenges, the study outlines a series of strategic measures aimed at elevating waste management awareness and responsiveness.

These include reevaluating waste management curricula, instituting stringent guidelines for waste segregation and disposal, and actively promoting recycling and appropriate waste disposal methods through targeted training sessions and workshops. Although the study's scope was confined to the school's boundaries, its ramifications extend well beyond.

Social and Practical Implications

By cultivating waste management awareness and responsiveness among pupils, the research contributes to the creation of a community that is increasingly environmentally conscious. Furthermore, the insights garnered offer a solid foundation for refining waste management strategies within the educational framework and the wider community. In a world where sustainable living is no longer optional, but imperative, effective waste management remains a paramount pursuit. Through education, heightened awareness, and proactive initiatives, students can evolve into agents of positive transformation, advocating for conscientious waste management practices that reverberate far beyond the school premises. As global environmental issues persist, this study underscores the pivotal role of education in nurturing upcoming generations to be custodians of a more wholesome and sustainable planet.

Declarations

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