ISRG Journal of Arts, Humanities and Social Sciences (ISRGJAHSS)

ISRG PUBLISHERS
Abbreviated Key Title: ISRG J Arts Humanit Soc Sci
ISSN: 2583-7672 (Online)
Journal homepage: https://isrgpublishers.com/isrgjahss
Volume – II Issue-III (May – June) 2024
Frequency: Bimonthly

E- WASTE MANAGEMENT KNOWLEDGE, ATTITUDE AND PRACTICES AMONG SENIOR HIGH SCHOOL STUDENTS AT PUDTOL VOCATIONAL HIGH SCHOOL

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| **Received:** 18.06.2024 | **Accepted:** 22.06.2024 | **Published:** 29.06.2024

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Abstract

This study examines e-waste management knowledge, attitudes, and practices among Senior High School students at Pudtol Vocational High School (PVHS). Utilizing a descriptive-correlational design, it profiles respondents and evaluates their e-waste management awareness and behaviors. The sample includes STEM and TVL track students, with complete enumeration for STEM and systematic random sampling for TVL. Data analysis involved frequency counts, percentages, weighted means, Pearson R correlation, and ANOVA. Findings show most students are 17-18 years old, mainly female, single, from STEM, and low-income families. Informal sources like friends are primary information channels, while newspapers are less used. Students exhibit moderate knowledge, fair practices, and favorable attitudes towards e-waste management. Significant knowledge differences exist by age, sex, educational track, and information source, but not by income. Practices vary by educational track, and attitudes by age, sex, and track, but not by income or information source. No significant correlations are found between knowledge and practices or attitudes. Recommendations include interactive expert sessions, curriculum integration, project-based learning, and community engagement to enhance e-waste management understanding and action.

Keywords: *E-waste management, Senior High School students, Knowledge, Practices, Attitudes*

Introduction

Waste management is one of the most critical components of modern society. With an increasing population, millions of tons of waste are produced daily, affecting the lives of countless individuals globally. Solid waste management is recognized as a significant worldwide issue, requiring immediate government and public response (Coracero, 2021). The Philippines has taken steps to improve its solid waste management through the passage of RA 9003, the Ecological Solid Waste Management Act, which provides for a systematic, comprehensive, and ecological waste

DOI: 10.5281/zenodo.12593477

management program to protect public health and the environment (Miguel, 2019).

Republic Act 9003 defines solid waste management as the discipline involving the control of generation, storage, collection, transfer, transport, processing, and disposal of solid wastes in accordance with principles of public health, economics, engineering, conservation, aesthetics, and environmental considerations, and in alignment with public attitudes (GOVPH, 2001). According to RN (2019), the successful implementation of solid waste management can be attributed to three major factors: people's orientation and strong political leadership, strong collaboration among different community sectors, and comprehensive information, education, and communication campaigns.

Vaccari (2014) identified several constraints to the implementation of waste management, including lack of machinery and technology, operational issues at facilities, lack of knowledge and awareness, difficulties collaborating with local stakeholders, insufficient supervision by controlling institutions, land ownership and availability issues, and lack of specific policies. Similarly, Mir et al. (2021) noted that administrative constraints, such as lack of modern technology and equipment, insufficient land for disposal, and the absence of an integrated solid waste management (ISWM) program, hinder successful waste management implementation.

One of the critical steps in managing waste is raising public awareness, which can only be achieved if governments and stakeholders globally take this health issue seriously. Media and associated platforms can be used to spread the message to various populations and every corner of the nation. Public participation in waste management processes is essential, requiring self-motivation and daily engagement. These actions are crucial for the success and welfare of the populace and the planet (Paghasian, 2017b). Continuous education and information campaigns on solid waste management should be conducted by the national government in collaboration with agencies and educational institutions like TESDA, CHED, and the Department of Education. Educational institutions are mandated to educate the public on the theories and practices of solid waste management.

Republic Act No. 9512, the National Environmental Awareness and Education Act of 2008, promotes environmental education through an inter-agency and multi-sectoral approach, involving the Department of Environment and Natural Resources (DENR), Department of Education (DepEd), Technical Education and Skills Development Authority (TESDA), Commission on Higher Education (CHED), Department of Science and Technology (DOST), Department of Interior and Local Government (DILG), and Department of Social Welfare and Development (DSWD). The Department of Education, in collaboration with stakeholders and partner agencies, promotes effective waste management practices, focusing on resource recovery, conservation, segregation at the source, and recycling, integrating these into school curricula, and aiding in program planning, monitoring, execution, and supervision at the school level ("Public schools join Ecosavers program | GOVPH," 2012).

Effective waste management initiatives at the school level require the involvement of diverse stakeholders. They must be informed of various laws, orders, programs, and projects initiated by different partner agencies or departments. The DepEd issues orders to guide schools in implementing projects related to waste management, including DepEd Order No. 5, Series 2014, which integrates the Gulayan sa Paaralan, Solid Waste Management, and Tree Planting under the National Greening Program (NGP) to address poverty, food security, biodiversity conservation, and climate change mitigation and adaptation (Department of Education, n.d.). Schools are mandated to implement regulations for segregating biodegradable, non-biodegradable, and recyclable wastes. However, e-waste management, a critical aspect of solid waste management, is often neglected.

E-waste, referring to obsolete or non-functional electronic devices and gadgets, requires special attention due to harmful components like lead, mercury, and cadmium. Proper e-waste management involves the collection, sorting, dismantling, recycling, or disposal of these materials to minimize environmental and health risks. The implementation of e-waste management in the DepEd faces several challenges, including lack of awareness and education on its importance, insufficient funds for environmentally friendly disposal, inadequate infrastructure, particularly in rural areas, and poorly implemented policies and regulations (Dagooc, 2019; Gordon, 2019).

Additionally, there is a shortage of trained personnel with the necessary skills and knowledge for effective e-waste management. Schools and local government units often lack the capacity and expertise to dispose of e-waste properly (Belmonte, 2020). This study aims to examine the association between knowledge and practices of students at Pudtol Vocational High School regarding e-waste management to minimize environmental and health risks.

Methodology

This study employed a descriptive correlational design to examine the profile, knowledge, practices, and attitudes of respondents regarding solid waste management. Descriptive statistics, including frequency counts, percentages, and weighted means, were used to describe these variables. To determine significant relationships between variables, Pearson R Correlation was employed, while Analysis of Variance (ANOVA) tested significant differences. The study utilized a 5-point Likert scale to assess students' knowledge, practices, and attitudes towards e-waste management, categorizing responses into levels such as expert, good, moderate, limited, and no knowledge, as well as very good to very poor practices and highly favorable to very poor attitudes.

Data collection began with obtaining permission from the Schools' Division Superintendent of Apayao and the Principal of Pudtol Vocational High School. Upon approval, questionnaires were distributed personally to all respondents. The collected data were then tallied, statistically treated, and analyzed. Descriptive statistics addressed the respondents' profile, including age, sex, civil status, educational track, monthly family income, and sources of e-waste management information. Pearson R Correlation Coefficient examined the relationships between students' e-waste management knowledge, practices, and attitudes, while ANOVA tested differences in these variables based on demographic profiles. The T-test assessed significant differences in e-waste management knowledge, attitude, and practices among students.

Results and Discussion

Profile of Teacher-Respondents

The general report with regard to the profile of respondents is discussed with regard to the age, sex, civil status, position/rank,

DOI: 10.5281/zenodo.12593477

number of years in teaching, highest educational attainment and seminars and training attended.

Age

Table 1 shows the frequency and percentage distribution of respondents according to age. The table reveals that most or 48 or 40.34% of the respondents are 17 years old, 32 or 26.89% are 18 years old, 19 or 15.97% are 16 years old, 14 or 11.76% are 19 years old, 4 or 3.36% are 20 and 2 or 6.68% are 21 years of age. With the mean of 17.51, it shows that most of the respondents aged between 17 to 18 years old.

Table 1. Frequency and Percentage Distribution of Respondents according to Age

Age	Frequency	Percentage
16	19	15.97
17	48	40.34
18	32	26.89
19	14	11.76
20	4	3.36
21	2	1.68
Total	119	100
Mean	17.51	

Sex

Table 2 reflects that there are 62 or 52.10% female and 57 or 47.90% male respondents. These data reflect that Senior High School Students of Pudtol Vocational High School is dominated by female.

Table 2. Frequency and Percentage Distribution of Respondents according to Sex

Sex	Frequency	Percentage
Male	57	47.90
Female	62	52.10
Total	119	100

Civil Status

In terms of student's civil status, it is reflected that all the 119 or 100% of respondents are single and no one is married yet.

Table 3. Frequency and Percentage Distribution of Respondents according to Civil Statu

Civil Status	Frequency	Percentage
Single	119	100.00
Married	0	0
Total	119	100

Track

According to Table 4, the majority of respondents belong to the Science, Technology, Engineering, and Mathematics (STEM) Strand, with 69 individuals representing 57.98% of the sample. The remaining 50 or 42.02% of respondents were classified under the Technical Vocational and Livelihood Track.

Table 4. Frequency and Percentage Distribution of Respondents according to Track or Strand.

Track/Strand	Frequency	Percentage
STEM	69	57.98
TVL	50	42.02
Total	119	100

Monthly Family Income

Table 5 shows the Frequency and Percentage Distribution of Respondents according to Monthly Income. As shown, 58 or 48.74% of the respondents are poor, 51 or 42.86% have low income, 10 or 8.40% belongs to lower middle bracket, while no one belongs to middle, upper middle or rich family.

Overall, with the mean income of P12,588.24, the data suggests that a majority of the respondents belong to the Low Income, indicating that there is a significant portion of the population that struggles to make ends meet or having a hard time meeting their expenses with their current income.

Table 5. Frequency and Percentage Distribution of Respondents according to Monthly Income

Monthly income	Frequency	Percentage
Poor Less than P9,520.00	58	48.74
Low Income Between P9,520.00- P19,040.00	51	42.86
Lower Middle Between P19,040.00-P38,080.00	10	8.40
Middle Between P38,080.00- P66,640.00	0	0
Upper Middle Between P66,640.00- P114,240.00	0	0
Upper Income Between P114,240.00- P190,400.00	0	0
Rich Above P190,400.00	0	0
Total	119	100
Mean	P12,588.24	

Students' Source of Information on E-waste Management

Table 6 presents the frequency and percentage distribution of respondents according to Source of Information on E-waste management.

As shown in the table, majority of the respondents (28.57%) obtained information about e-waste management from their friends, followed by TV programs (21.85%) and lessons in school (24.37%). This indicates that informal sources of information are more popular than formal sources.

A relatively smaller percentage of respondents gained information about e-waste management from seminars (2.52%), family members (4%), newspapers (3.36%), and training (1.68%). This suggests that such sources are not as popular as other sources of information. A very small percentage of respondents (0.84%)

DOI: 10.5281/zenodo.12593477

received information about e-waste management from books and workshops, respectively.

It is interesting to note that only 5.88% of the respondent's obtained information about e-waste management from newspapers. This indicates that newspapers are not a popular source of information for this topic.

Table 6. Frequency and Percentage Distribution of Respondents according to Source of Information on E-waste management

Source of E-waste Management Information	Frequency	Percentage
TV Programs	26	21.85
Friends	34	28.57
Lesson in School	29	24.37
Books	1	0.84
Seminar	7	5.88
Family Member	3	2.52
News Paper	12	10.08
Training	4	3.36
Magazine	2	1.68
Workshop	1	0.84
Total	119	100

Students' Knowledge on E-waste Management

Table 7 presents the results of the assessment done to determine the level of knowledge of students on E-waste management. The data shows that the students have a moderate to good knowledge of E-waste management. Specifically, the students displayed a "Good Knowledge" on the adverse effects of E-waste on the environment, the importance of recycling, the E-waste management programs of the school and community, and the possible illnesses that can result from improper disposal.

However, the students showed "Moderate Knowledge" on the meaning of E-waste, proper segregation, environmental harm, impact on human health, concept of recycling, proper disposal methods, significant environmental problem, legislation related to E-waste, hazardous components, non-hazardous components, and corresponding sanctions for violations. In addition, the students exhibited "Limited Knowledge" about E-waste disposal. Overall, the students' mean score of 3.05 indicates that they have a moderate level of knowledge on E-waste management. This is supported with the study of (Bacani and Gacilo, 2019) which states that the students had a moderate level of knowledge about e-waste in the Philippines.

Table 7. Students' Level of Knowledge on E-waste Management

Knowledge		Mean	Descriptive Rating
1	Definition and meaning of E-waste.	2.78	Moderate Knowledge
2	Proper segregation of E-waste.	2.72	Moderate Knowledge
3	Environmental harm caused by e-waste.	2.89	Moderate Knowledge
4	The impacts electronic waste on human health.	2.88	Moderate Knowledge
5	Concept of recycling electronic waste.	3.17	Moderate Knowledge
6	Proper disposal of E-waste	2.58	Limited Knowledge
7	Proper methods of disposing of electronic waste.	2.85	Moderate Knowledge
8	E-waste as a significant environmental problem.	2.81	Moderate Knowledge
9	Legislation related to e-waste.	2.77	Moderate Knowledge
10	Hazardous and non-hazardous components of e-wastes	2.95	Moderate Knowledge
11	Adverse effects of e-waste on the environment.	3.52	Good Knowledge
12	Possible illnesses that one can get whenever trashes or e-wastes are not properly disposed.	3.45	Good Knowledge
13	Corresponding sanctions of any violations of the Solid Waste Management (SWM) program or E-waste Management Program.	3.28	Moderate Knowledge
14	The importance of recycling e-wastes.	3.55	Good Knowledge
15	Solid Waste Management (SWM) Program or E-waste Management program of the School and community.	3.54	Good Knowledge
Mean		3.05	Moderate Knowledge

Students' Practices on E-waste Management

Table 8 presents the practices of students in terms of E-waste management. As reflected in the table the students have a "Good" level of practice in terms of separating e-waste from regular waste, avoiding burning or incinerating broken electronic devices, avoiding dumping electronic devices in rivers or sea, using rechargeable batteries instead of disposable ones to reduce battery waste, setting aside broken electronic devices for proper recycling, repurposing old electronics to give them a new use instead of throwing them away, buying electronic devices with a longer lifespan to reduce e-waste and encouraging others to properly dispose of their e-waste.

On the other hand, they have a "Fair" level of practice in terms of throwing away broken electronic devices without attempting to repair them, selling broken electronic devices to recyclers or selling on as spare parts, avoiding buying unnecessary or excessive electronic devices, donating working electronic devices to those in need, reducing e-waste by repairing electronic devices instead of

DOI: 10.5281/zenodo.12593477

replacing them, participating in e-waste collection events in school and community, and educating themselves and others on the importance of e-waste management.

With a mean of 3.38, it means that the students have a "Fair" practice in E-waste management. This indicates that there is still a further scope to attain a higher level of sustainable practices.

Table 8. Students' Level of Practice on E-waste Management

Practices		Mean	Descriptive Rating
1	Separating e-waste from regular waste	3.64	Good
2	Throwing away broken electronic devices without attempting to repair them.	2.65	Fair
3	Avoid burning or incinerating broken electronic devices	3.17	Good
4	Avoid dumping electronic devices in river or sea	3.58	Good
5	I sell broken electronic devices to recycler or sell on as spare parts.	3.40	Fair
6	Avoid buying unnecessary or excessive electronic devices.	3.37	Fair
7	Using rechargeable batteries instead of disposable ones to reduce battery waste.	3.52	Good
8	Setting aside broken electronic devices for proper recycling.	3.77	Good
9	Re-purposing old electronics to give them a new use instead of throwing them away.	3.50	Good
10	Donating working electronic devices to those in need.	3.08	Fair
11	Reducing e-waste by repairing electronic devices instead of replacing them.	3.16	Fair
12	Participating in e-waste collection events in school and community.	3.24	Fair
13	Buying of electronic devices with a longer lifespan to reduce e-waste.	3.63	Good
14	Educate oneself and others on the importance of e-waste management.	3.34	Fair
15	Encouraging others to properly dispose of their e-waste.	3.60	Good
Mean		3.38	Fair

Students' Attitude on E-waste Management

According to the data presented in Table 9, students generally exhibit a favorable attitude towards managing electronic waste. They recognize the importance of taking personal responsibility for reducing e-waste, acknowledge the significance of proper disposal methods, and are willing to make the necessary changes to reduce the harmful impact of improper e-waste disposal on the environment. The students demonstrate a strong willingness to invest their time and effort in finding new and effective ways to dispose of electronic waste, willing to pay extra for products that have longer life spans and produce less electronic waste. They also thinks that lack of knowledge is a big reason that more people don't' properly dispose of their electronic wastes, therefore believes that encouraging others to dispose properly their electronics wastes is needed and e-waste management should be a priority for governments and businesses.

Additionally, they show a "favorable" attitude or preference for buying from companies that offer e-waste recycling programs, believes that stricter regulations for e-waste management should be established by the government and are favorable in recognizing that electronics manufacturers have a responsibility to dispose of electronic products and their waste,

Furthermore, the students also have a "favorable 'attitude or response on believing that e-waste management is a crucial issue that requires immediate attention and are open to learning more about the topic to be able to contribute to finding solutions and considers pursuing a career or further education related to e-waste management and sustainability.

However, it is noted that the students have a "moderate" attitude when it comes to acknowledging the serious negative effects of electronic waste on the environment and human health.

Overall, with the total mean of 3.71, the data implies that the students have a favorable attitude towards e-waste management and are motivated to support proper e-waste disposal.

Table 9. Students' Level of Attitude on E-waste Management

Attitude		Mean	Descriptive Rating
1	Feel personally responsible for reducing electronic waste.	3.85	Favorable
2	Thinks that proper disposal of electronic waste is important	3.84	Favorable
3	Believes that electronic waste have serious negative effects on the environment and human health.	2.82	Moderately Favorable
4	Willing to make changes in behavior to reduce the impact on the environment through proper e-waste management.	4.17	Favorable
5	Willing to invest time or effort to find ways to properly dispose of my electronic waste.	3.66	Favorable
6	Encourage others to properly dispose of their electronic waste.	3.83	Favorable
7	Thinks that e-waste management should be a priority for governments and business.	3.69	Favorable
8	Willing to pay a little extra for products that have longer life span and generate less electronic waste.	3.50	Favorable

DOI: 10.5281/zenodo.12593477

9	More likely to buy electronic products from companies that offer e-waste recycling programs.	3.74	Favorable
10	Thinks that lack of knowledge is a big reason that more people don't' properly dispose of their electronic wastes.	3.59	Favorable
11	Believes that e-waste management is an important issue that warrants attention.	3.82	Favorable
12	Willing to learn more about e-waste management and contribute to the solution.	3.82	Favorable
13	Thinks that governments should establish stricter regulations for e-waste management.	3.69	Favorable
14	Believes that electronics manufacturers have a responsibility to dispose of their products' electronic waste.	3.97	Favorable
15	Considers pursuing a career or further education related ti e-waste management and sustainability.	3.66	Favorable
Mean		3.71	

Significant Difference on Students' E-waste Management Knowledge when Grouped According to Profile Variables

Table 10 shows the comparison between E-waste management Knowledge of students when group according to profile variables. The results indicate that with a 0.0055, 0.00243, 0.0088 and 0.00 level of significance, this indicates that the knowledge of students differ depending on their age, sex, track and source of information. This means that there is a difference between students' knowledge when they are younger or older, male or female, from STEM or TVL class and when they have different source of information about e-waste management.

Additionally, it is interesting to note that there is no significant difference on the knowledge of students when group according to their monthly income. This indicates that whether the students belong to poor or low-income family, or in a family that are rich their knowledge on e-waste management is not affected. This means that a student's financial resources do not necessarily affect their knowledge of e-waste management. It also implies that financial resources are not a factor in a student's ability to understand and practice proper e-waste management, and that education efforts for e-waste management can be targeted at all income levels. This is in contrast with the study of Rahman et al. (2019), which states that students' socio-economic backgrounds were significant predictors of their e-waste management behavior. Specifically, students from low socio-economic backgrounds had less knowledge, less positive attitudes, and lower-level practice of e-waste management.

Table 10. Comparison between E-waste Management Knowledge of Students when group according to profile variables

Profile	Computed Value	P-Value	Statistical Decision
Age	3.51	0.0055	Significant
Sex	-2.87	0.00243	Significant
Track	2.41	0.0088	Significant
Monthly Family Income	0.66	0.71	Not Significant
Source of Information	6.96	0.00	Significant

**Significant @ .05 level*

Significant Difference on Students' E-waste Management Practices when Grouped According to Profile Variables

Table 11 presents a comparison of E-waste Management Practices among students when grouped according to various profile variables. The results indicate a significant difference in the e-waste practices of students when grouped by track or strand, with a p-value of 0.00; thus, the null hypothesis is rejected for this variable. However, no significant differences were found between other profile variables—such as age, sex, monthly family income, and source of information related to e-waste—and the students' e-waste practices, leading to the acceptance of the null hypotheses for these variables.

This implies that the educational track of students might play a crucial role in shaping their practices towards e-waste management which is the same with the study of Obaidullah et al. (2020) which indicates that students' level of knowledge, attitude, and practice towards e-waste management was influenced by their academic disciplines. , while other factors such as age, sex, family income, and information source do not seem to have a significant impact on their practice towards e-waste management.

Table 11. Comparison between E-waste Management Practices of Students when group according to profile variables

Profile	Computed Value	P-Value	Remarks
Age	0.29	0.92	Not Significant
Sex	-0.83	0.41	Not Significant
Track	4.41	0.00	Significant
Monthly Family Income	1.19	0.32	Not Significant
Source of Information	1.48	0.21	Not Significant

**Significant at 0.05 level*

Significant Difference on Students' E-waste Management Attitude when Grouped According to Profile Variables

Table 12 shows the differences in E-waste Management Attitudes among students when grouped according to various profile variables. The results indicate significant differences in students' e-waste management attitudes when grouped by age, sex, and

DOI: 10.5281/zenodo.12593477

educational track, with p-values of 0.0055, 0.00243, and 0.0077 respectively. These p-values are lower than the 0.05 level of significance, leading to the rejection of the null hypothesis for these variables. This suggests that age, sex, and educational track are important factors influencing students' attitudes towards e-waste management.

However, the results also indicate no significant differences in the e-waste management attitudes of students when grouped by monthly family income and source of information. Therefore, the null hypothesis is accepted for these variables, implying that students' income levels and sources of information about e-waste do not significantly affect their attitudes towards e-waste management. This finding contrasts with the study by Naveed et al. (2020), which found that students with higher income levels had a better understanding and were more inclined to dispose of their electronic devices in an environmentally friendly manner.

Table 12. Comparison between E-waste Management Attitude of Students when group according to profile variables

Variables	Computed Value	0.94	Remarks
Age	0.98	0.0055	Significant
Sex	-1.71	0.00243	Significant
Track	5.30	0.0088	Significant
Monthly Family Income	1.80	0.09	Not Significant
Source of Information	0.94	0.44	Not Significant

**Significant at 0.05 level*

Association between Students E-waste Knowledge and Practices

Table 13 shows that there is no significant relationship or association between students' e-waste knowledge and practices. Therefore, the null hypothesis is accepted. Furthermore, the results imply that having knowledge about e-waste management does not necessarily translate to proper e-waste practices. This means that mere awareness or understanding of e-waste management does not guarantee appropriate or correct disposal practices or one may have detailed knowledge of e-waste management practices and yet fail to implement them in the correct manner.

Table 13. Association between Students E-waste Knowledge and Practices

Variables	Mean	Std. Deviation	r value	0.165
Knowledge	2.80	0.27	0.165	**Not significant**
Practice	2.93	0.22		

**Significant at 0.05 level*

Association between Students ' E-waste Knowledge and Attitudes

The association between the knowledge and attitude of students on e-waste management is presented on Table 14. As indicated in the table, the r value is -0.047, which means very weak correlation or there is no significant association between the knowledge and attitude of students on e-waste management. Therefore the null hypothesis is accepted. With the weak correlation, it implies that additional factors or variables may play a bigger role in driving positive attitudes towards e-waste management.

Moreover, this shows that the knowledge of the students on e-waste managemnet has nothing to do with their attitude, or being aware or knowledgeable about e-waste management may not necessarily result in positive attitudes towards e-waste.

This is in contrast with the study of Iyer and Shankar (2018) whose findings revealed that awareness and knowledge of e-waste led to positive changes in students' attitudes towards handling and disposal of e-waste.

Table 14. Association between Students ' E-waste Knowledge and Attitudes

Variables	Mean	Std. Deviation		Statistical Decision
Statistical Decision	2.80	0.27	r value	Not Significant
Attitude	2.80	0.22		

**Significant at 0.05 level*

Table 15. Programs to Enhance E-waste Management Knowledge, Practices, and Attitudes

Category	Program Component	Objective	Description	Activities
Knowledge	E-waste Management Knowledge Enhancement Program	To improve students' understanding of e-waste management	Workshops and Seminars	Organize interactive sessions with experts
			Curriculum Integration	Develop lesson plans on e-waste lifecycle, impact, and disposal
			Project-Based Learning	Implement research projects and presentations on e-waste topics
Practices	E-waste Management Practices Enhancement Program	To promote effective e-waste management practices	Recycling Programs	Establish school-wide recycling initiatives
			Practical Workshops	Conduct hands-on workshops for safe handling and dismantling of e-waste

DOI: 10.5281/zenodo.12593477

			DIY Repair and Upcycling Sessions	Host sessions for repairing or upcycling old electronics
			School Competitions	Organize competitions for innovative e-waste solutions
Attitudes	E-waste Management Attitude Enhancement Program	To cultivate a proactive attitude towards e-waste management	Awareness Campaigns	Community Service Initiatives
			Community Service Initiatives	Engage students in community clean-ups and e-waste collection events

Conclusions

The study concludes that most respondents are 17-18 years old, predominantly female, single, from the STEM strand, and belong to low-income families. They primarily learn about e-waste management through friends or informal sources, with newspapers being less popular. Students exhibit moderate knowledge, fair practices, and favorable attitudes towards e-waste management. Significant differences in knowledge are observed based on age, sex, educational track, and source of information, but not on monthly income. Practices significantly differ by educational track, while attitudes vary by age, sex, and educational track, with no significant differences based on monthly income or source of information. Additionally, there is no significant association between knowledge and practices or knowledge and attitudes towards e-waste management.

Recommendations

To enhance e-waste management knowledge, practices, and attitudes among students, the school should organize interactive sessions with experts, integrate e-waste management lessons into the curriculum, and implement project-based learning activities. Establishing school-wide recycling initiatives and providing hands-on workshops for safe handling, dismantling, repairing, or upcycling electronics are essential for practical skill development. Additionally, hosting competitions for innovative e-waste solutions can stimulate creativity and problem-solving skills. Awareness campaigns via posters, social media, and school announcements, along with community clean-ups and e-waste collection events, will cultivate a proactive attitude and a sense of responsibility towards e-waste management and environmental protection.

Declaration of no conflict of interest

The author hereby declares no conflict of interest and this article is her original work.

Acknowledgment

The researcher would like to thank all those who contributed whether big or small in the completion of this study

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