International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

INTERNATIONAL JOURNAL OF MODERN TRENDS IN SOCIAL SCIENCES (IJMTSS)
www.gaexcellence.com/ijmtss

ASSESSING THE KNOWLEDGE, ATTITUDE, AND PRACTICE ON WASTE MANAGEMENT IN LYCEUM OF THE PHILIPPINES UNIVERSITY CAVITE

Ysabel Kristine S. Lopez[1], Alyssa Kyle N. Cañete[2], Mary Abigail M. Roslin[3], Amber Mae Marbella[4], Andrea Isabel T. Lina[5], Krisma Joyce S. Salazar [6*]

[1]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
ysabel.lopez@lpunetwork.edu.ph https://orcid.org/0009-0000-1225-8488
[2]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
alyssa.canete@lpunetwork.edu.ph https://orcid.org/0009-0009-4574-4760
[3]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
mary.roslin@lpunetwork.edu.ph https://orcid.org/0009-0004-7443-5450
[4]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
amber.marbella@lpunetwork.edu.ph https://orcid.org/0009-0000-2247-5793
[5]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
andrea.lina@lpunetwork.edu.ph https://orcid.org/0009-0000-0108-1269
[6]College of Business Administration, Lyceum of the Philippines University- Cavite, Philippines
krisma.salazar@lpu.edu.ph https://orcid.org/0009-0003-4896-6074
*Corresponding Author

Article Info:

Article history:
Received date: 17.03.2026
Revised date: 09.04.2026
Accepted date: 30.04.2026
Published date: 08.06.2026

Abstract:

Waste management remains a critical concern in higher education institutions, particularly as universities are expected to promote sustainability through responsible environmental practices. Even though there is an increased literature on the subject of waste management in higher education, the majority of the research concentrates on the students, or the observations of one segment of the university community. Very little has been done to explore knowledge, attitudes and practices of waste management among the various stakeholder groups in one institutional environment. To fill this gap, this study evaluated and compared the knowledge, attitudes and practices revolving around waste management of undergraduate students, faculty members, canteen vendors, and janitors in the Lyceum of the Philippines University-Cavite. The paper particularly focused on four waste management dimensions that included solid waste, food waste, energy waste, and water waste. The quantitative research design applied

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

To cite this document:

Lopez, Y. K. S. N. Cañete, A. K. M. Roslin, M. A., Marbella, A. M., T. Lina, A. I., & S. Salazar, K. J. (2026). Assessing the Knowledge, Attitude, And Practice on Waste Management in Lyceum of the Philippines University Cavite. *International Journal of Modern Trend in Social Sciences, 9*(34), 01-20.

was a descriptive-correlational and stratified random sampling was adopted to select 663 participants. The questionnaires were based on structured questionnaires that were conducted both on printed copies and online and analysed by descriptive statistics and inferential tests. The results revealed that the activities of most respondents were high in terms of their knowledge and attitudes towards waste management. But it was performed only frequently, which means that there was a lack of knowledge-practice consistency in their actions when it came to practicing sustainable behaviors. The statistical analysis also showed that there was a significant difference in knowledge, attitudes and practices among four dimensions of waste management. The results indicate that the knowledge and positive attitudes of the respondents are not always converted into consistent practice. The literature gap is that the study demonstrates a multi-stakeholder orientation of waste management practices within a higher education institution and has useful implications on designing more specific sustainability programs and institutional policies.

DOI: 10.35631/IJMTSS.934001

Keyword:

Knowledge, Attitude, and Practice (KAP); Waste Management

Introduction

Waste management has become a vital global problem in today's world due to the sheer amount of waste produced and its environmental impact. Higher Education Institutions (HEIs) as centers of knowledge and social responsibility have a pivotal role to play in ensuring sustainable practices in their communities. As part of their commitment towards sustainability, an increasing number of HEIs are integrating waste management policies in line with the United Nations (UN) Sustainable Development Goals (SDGs), more specifically the SDG 12 (responsible consumption and production).

In the Philippines, where the combined effects of urbanization and population increase have resulted in serious waste management concerns, integrating sustainability with education has attracted attention in educational institutions in the country. Studies have shown that although students and staff can have significant knowledge of principles of waste management, they still may find it difficult to convert knowledge into constant practice (Hassan & Rosli, 2022). Furthermore, the research carried out by Ylaya and Malicay (2022) explains the value of promoting a proactive attitude towards waste reduction, as this could be viewed as the awareness alone won't necessarily result in consistency in terms of waste management act.

A large number of literatures have been conducted regarding knowledge, attitudes, and practices (KAP) related to waste management among university populations, both in terms of awareness of waste reduction initiatives and applications of waste management strategies (Molina & Catan, 2021; Antalan & Tungpalan, 2020). However, some of these studies focus

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

on quantitative analysis and tend to overlook the reasons why disparity between positive attitudes and actual practices exists. In addition, although many interventions have been proposed, little evidence exists about their value in creating sustainable changes in behaviour in HEI contexts.

At Lyceum of the Philippines University - Cavite (LPU-C) the approach to waste management focuses on policies which are in compliance with the laws of the country such as the Ecological Solid Waste Management Act of 2000 (Republic Act No. 9003). Despite these attempts, the latest assessment shows that although LPU-C stakeholders show a good level of knowledge and a positive attitude in the field of waste management, their practices are not consistent, being defined as 'often practiced' rather than completely implemented. This discrepancy raises questions as to what factors prevent the regular application of sustainable waste management practices, despite this being in an educational environment and where sustainability is being encouraged.

This study aims to conduct research to identify the gaps and investigate the phenomenological reasons for the gap between knowledge, attitude and practice of LPU-C students, faculty, canteen vendors and the janitors with respect to waste management. By determining the barriers to consistent implementation, this study will give evidence-based recommendations to increase sustainable practices within the university community. The results of this research study will add to the wider debate about sustainable waste management in HEIs and provide information that could be used to develop policy and implementation measures not only in LPU-C, but also in other similar educational settings.

Methodology

Research Design

This study employed a quantitative research approach using a descriptive-correlational design. This design was appropriate because it allowed the researchers to systematically assess and describe the knowledge, attitudes, and practices on waste management among the selected respondents of Lyceum of the Philippines University-Cavite. The descriptive component was used to determine the level of respondents' knowledge, attitudes, and practices in relation to solid waste, food waste, energy waste, and water waste management. On the other hand, the correlational component was used to examine whether significant differences existed in these variables when respondents were grouped according to their socio-demographic profile, such as age, sex, educational attainment, longevity, occupation, and department.

The study used numerical data gathered through a structured questionnaire administered to the respondents. Data were analysed using descriptive statistics, such as frequency, percentage, mean, and standard deviation, to summarize the respondents' profile and determine the level of knowledge, attitudes, and practices on waste management. Inferential tests, including analysis of variance (ANOVA) and chi-square test, were used to examine significant differences across groups. Through this design, the study was able to evaluate, measure, describe, and compare the knowledge, attitudes, and practices on waste management among the selected stakeholder groups in the university.

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

Research Locale

The researchers conducted the study in Lyceum of the Philippines University - Cavite - the first and only resort campus in the Philippines, an outstanding educational institution dedicated to delivering quality and holistic education, promoting intellectual development and nurturing a diverse community of learners. As a younger and thriving university, its culture of collaboration helps ignite new discoveries that would help the advancement of society and drive economic impact. With regards to this, the Cavite Campus has already been awarded as a certified ISO 9001:2015 and 14001:2015 Environment Management System by Societe General de Surveillance together with the Manila and Makati Campuses. Currently, the University has been very active in pursuing their practice on partaking in the promotion of SDG.

Research Participants

The participants of the present study were students, faculty members, canteen vendors and janitors. As for the category of students, it was selected in the category of students enrolled in the academic year 2023-2024, the students were undergraduate college students as a whole, either as regular students or as irregular students. Faculty members, with no distinction of employment status (part or full time), from College of Allied Medical Sciences (CAMS), College of Business Administration (CBA), College of Engineering, Computer Science and Architecture (COECSA), College of Fine Arts and Design (CFAD), College of International Tourism and Hospitality Management (CITHM), College of Liberal Arts and Education (CLAE), and College of Nursing (CON). Canteen stalls of the LPU -C campus, located at the ground floor (if the East Building), the fifth floor (Jose P. Laurel Building) and the ground floor (COECSA building - The Circuit) Lastly, the maintenance personnel category included all the janitors and janitresses that worked at the LPU-C campus with the outsourcing agencies of City Service and Service Master. Qualification from Junior High School and Senior High School were provided but only for canteen vendors and janitors.

Research Instrument

Data were collected using a structured questionnaire, developed by the researchers based on a review of existing waste management studies and aligned with the study's objectives. The questionnaire consisted of four sections:

1. Socio-Demographic Information (Age, Sex, Occupation, Educational Attainment, etc.)
2. Knowledge on solid waste, food waste, energy waste, and water waste management
3. Attitude towards waste management practices
4. Practice of waste management behaviors

The instruments were pre-tested through a pilot study to assess their reliability and validity. The reliability was determined using Cronbach's Alpha with a threshold of 0.70 or higher, ensuring the internal consistency of the scale.

Data Gathering Procedure

The data were collected using a measure of printed questionnaires and online survey (using Google Forms). Participants received an informed consent form that described the study's purpose, voluntary nature and the confidentiality of their answers. The printed questionnaires

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

were sent to participants approx. on the site in the case of a preference for paper format and the online link was provided in the case of a preference for electronic format. Data collection was carried out for a period of two months which was between September and November 2023.

Ethical Considerations

The researchers said that participation was voluntarily. Participants were given the right to refuse and exit at any time without any consequences. To maintain confidentiality of the participant, the survey questionnaire omitted name, contact number and e-mail address as they were not considered in relation to the problem statement. A consent letter was provided to make sure they are fully aware of the implications before participating in the data gathering process. All data collected was used strictly for academic purposes and no one else in the research team. The statistician involved was only given information to fulfil analysis and interpretation. To maintain the greatest standard of integrity, there should be a commitment to honest reporting throughout the research. This help to ensure that all the findings (supporting and not supporting are equally communicated) without any bias. So, interestingly enough, any act of plagiarism was strictly forbidden. It became imperative that it does the research with most originality and make proper citations of sourcing that they consider as the credibility and ethical foundation of the research.

Results And Discussion

The section includes the findings with respect to the knowledge, attitudes and practices of the respondents on waste management. The discussion positions the differences on how these variables under difference in terms of solid waste, food waste, energy waste, and water waste management as well as their differences under the selections of socio-demographic factors. The results can be used to gain a more general idea about waste management behavior of students, faculty, canteen vendors, and janitors at Lyceum of the Philippines University-Cavite.

Table 1: Socio-demographic of Participants

	Profile	**Frequency N=663**	**Percentage (%)**
Sex	Male	365	55.10
	Female	298	44.90
Age	18-27	476	71.80
	28-37	110	16.60
	38-47	47	7.10
	48-57	28	4.20
	58 and above	2	0.30
Educational Attainment	Junior High School	55	8.30
	Senior High School	56	8.40
	Undergraduate College	389	58.70
	College Graduate	81	12.20
	Masters	73	11.00
	PhD	9	1.40
Longevity	Less than a year	173	26.10
	1-2 years	156	23.50
	3-4 years	178	26.80

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

	5 years and above	156	23.50
Occupation	Student	389	58.70
	Faculty Members	158	23.80
	Canteen Vendor	63	9.50
	Janitor	53	8.00
Department	CBA	84	12.70
	COECSA	167	25.20
	CAMS	40	6.00
	CFAD	34	5.10
	CITHM	160	24.10
	CLAE	45	6.80
	CON	29	4.40
	Others	104	15.70

Of the 663 respondents, 365 or 55.10% were male, while 298 or 44.90% were female. This means that there is a provision of slightly more representation of male respondents in the study. Regarding age, the majority of the respondents were aged 18-27 years, and this represented 71.80% of the sample with the rest being spread out in other older age groups. This implies that the subjects of the study were highly among the younger population, and this is understandable considering the great percentage of respondents who were students. Similar demographic patterns have been observed in studies involving university-based waste management and environmental behavior (Badrum & Mapa, 2020; Marwood et al., 2023).

In regard to education, majority of the respondents were undergraduate college students with 58.70 percent of the entire sample. Minor fractions were allocated to junior high school, senior high school, college graduates, master's degree holders and PhD holders. Distribution was relatively equal within the university in terms of years of stay within the university, but the biggest population were students who remained within the university over a period of three to four years, with a population of 26.80. This implies that a large number of the respondents had had sufficient time in the university to get acquainted with the practices and policies of the university. Previous studies have also noted that educational exposure and institutional experience may influence environmental knowledge and awareness (Nyampundu et al., 2020; Muniandy et al., 2021).

Students occupied the first position as they comprised the majority of the 58.70, then faculty members (23.80), canteen vendors (9.50) and janitors (8.00). Regarding department, the respondent percentage of COECSA was the highest with 25.20 and CITHM coming next with 24.10. The diversity of the respondents in terms of occupations and departments is a sign of multi-stakeholder quality of the study and its purpose to investigate waste management issues in the variety of the university community sectors. This is consistent with the view that occupational roles and academic affiliations can shape environmental awareness and engagement (Qaderi et al., 2021; Yusuf & Fajri, 2022).

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

Table 2. Level of Knowledge on Waste Management

Factor	$\bar{x}$	s	Level of Agreement	Interpretation
Solid Waste	3.68	0.621	Strongly Agree	High Level of Knowledge
Food Waste	3.49	0.709	Strongly Agree	High Level of Knowledge
Energy Waste	3.63	0.643	Strongly Agree	High Level of Knowledge
Water Waste	3.50	0.741	Strongly Agree	High Level of Knowledge
Total	**3.58**	**0.6785**	**Strongly Agree**	**High Level of Knowledge**

Table 2 indicates that the respondents were generally found to have high level of knowledge on waste management with a total mean of 3.58. The best score was solid waste management with a mean of 3.68 then energy waste management with a mean of 3.63. The average in terms of the Water waste management was 3.50, whereas food waste management had the least mean of 3.49. Although there are such differences, all the four areas were viewed as a sign of high level of knowledge. This finding supports earlier studies showing that members of higher education institutions often possess adequate knowledge of proper waste management practices, although this knowledge may vary depending on the area being examined (Hassan & Rosli, 2022; Liu et al., 2024).

In solid waste management, the respondents were highly aware of simple classification of waste especially in the recognition of biodegradable, non-biodegradable and recyclable waste. The respondents were however found to be relatively less aware of the specific solid waste management guidelines as stipulated by the university and this may indicate that they are familiar with the overall idea of waste separation but may not be familiar with institutional policies. This means that there is an implication of the existence of knowledge in principle but then there is still the need to reinforce policy-specific knowledge. Similar findings were reported by Molina and Catan (2021) and Ruiz et al. (2021), who found that students were generally aware of waste segregation but less familiar with formal waste management systems and institutional guidelines.

Respondents in food waste management were also very knowledgeable especially in the differentiations between perishable and non-perishable. The lowest score in this category, however, was knowledge associated with the institutional food waste guidelines. It implies that the respondents might also be conversant with the aspects of food waste in their day-to-day activities though might not know much about official policies and programs of the university. The same trend was found on energy waste management where the respondents were highly aware of the necessity to conserve energy but with relatively low awareness on the university energy conservation policy. It means that on-the-job knowledge can be as powerful as institutional frameworks knowledge. Previous studies have likewise shown that awareness of food waste exists, but institutional knowledge and structured implementation are often less developed (Alatar, 2020; Selena et al., 2021; Alarinta & Wirtanen, 2023).

On the aspect of water waste management, the respondents also exhibited an excellent body of knowledge especially when it comes to the significance of water in life and in the environment. Nevertheless, knowledge of particular issues, including how much water is wasted by a leaking tap, had lower scores. This implies that, though the respondents are aware of the importance of water conservation, there might be some technical or situational issues concerning the question of water waste that they might lack understanding. On the whole, the findings suggest that the level of knowledge about waste management held by the respondents is rather high, yet the

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

distribution of university-related policies and practical information can be further enhanced. Similar observations were noted in studies emphasizing the need to connect general awareness of water conservation with specific and practical knowledge on water-saving behavior (Singh et al., 2022; Banyan Water, 2023).

Table 3: Level of Attitude on Waste Management

Factor	$\bar{x}$	s	Level of Agreement	Interpretation
Solid Waste	3.68	0.621	Strongly Agree	Positive Attitude
Food Waste	3.62	0.627	Strongly Agree	Positive Attitude
Energy Waste	3.53	0.691	Strongly Agree	Positive Attitude
Water Waste	3.53	0.691	Strongly Agree	Positive Attitude
Total	**3.59**	**0.6575**	**Strongly Agree**	**Positive Attitude**

Table 3 indicates that the respondents were biased towards the positive aspect of waste management with the average response rate of 3.59. Solid waste management recorded the greatest score of 3.68, food waste management was at 3.62 then energy waste management and water waste management had a mean of 3.53 and 3.53 respectively. The four areas were all seen to have positive attitudes towards waste management. These findings align with previous studies reporting that university stakeholders usually express favorable views toward environmental protection and waste reduction efforts (Konstantinidou et al., 2024; Liu et al., 2024).

In solid waste management, the respondents supported most of the principles of reduce, reuse and recycle. Without a doubt, however, the enthusiasm to engage in the recycling operations was associated with a rather lower mean than the rest of the items in the category. This indicates that, although waste reduction policies tend to be supported by respondents, there might be no equal enthusiasm related to taking part in activities pertaining recycling. That is, when the perception is positive, it does not necessarily imply active involvement. This pattern has also been observed in earlier research, where favorable environmental attitudes were not always matched by consistent recycling behavior (Konstantinidou et al., 2024; Yap & Sharaai, 2022). On food waste management the respondents were supportive of institutional initiative to reduce food waste, but the score was a little lower on individual responsibility on food waste reduction. It means that the respondents can be more open to institutional led or organized solutions, as compared to making regular personal boundary adjustments in their own behavior. The same trend was experienced in the energy and water waste management sectors. The respondents felt good in relation to energy saving and water saving, but others that concerned real personal devotion, including the use of energy saving at all times where applicable or acquiring products that save water scored less. Findings were reported by Zhang et al. (2024) and Alatar (2020), who found that respondents often support food waste reduction in principle but show less consistency in personal action.

In general, the results indicate that the respondents tend to attach importance to the process of waste management and believe in the sustainable approach. Nevertheless, relatively lower scores on items that require direct or sustained personal action, demonstrate that positive attitudes might not be sufficient in guaranteeing adherence to behavioral commitment. These findings lead to the conclusion that interventions that could reinforce the connection between attitude and actual practice are necessary. Related studies have similarly shown that individuals

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

often endorse energy and water conservation at the attitudinal level but do not always maintain the same level of commitment in practice (Goh et al., 2021; Singh et al., 2022).

Overall, the findings suggest that the respondents generally value waste management and support sustainable practices. However, the relatively lower scores for items involving direct or sustained personal action indicate that positive attitudes may not be enough to ensure consistent behavioral commitment. These results point to the need for interventions that can strengthen the link between attitude and actual practice, a concern also raised in previous waste management studies in higher education and community settings (Odonkor & Sallar, 2021; Konstantinidou et al., 2024).

Table 4: Level of Practice on Waste Management

Factor	$\bar{x}$	s	Level of Agreement	Interpretation
Solid Waste	2.76	0.944	Agree	Often Practiced
Food Waste	2.68	0.944	Agree	Often Practiced
Energy Waste	3.03	0.860	Agree	Often Practiced
Water Waste	3.12	0.916	Agree	Often Practiced
Total	**2.90**	**0.916**	**Agree**	**Often Practiced**

Table 4 shows that overall waste management practices among the respondents were usually only frequently undertaken and the overall mean of waste management practices is 2.90. Water waste management was in the fourth category with an average of 3.12, and energy waste management was at 3.03. The average in solid waste management was 2.76 and food waste management had the lowest 2.68. Whereas the perception of all four areas was often and frequent, the actual implementation is less strong than the knowledge and the attitude. This pattern is consistent with earlier research showing that knowledge and attitudes toward waste management are often stronger than actual day-to-day behavior (Hassan & Rosli, 2022; Zhang et al., 2024).

In solid waste management, CLAYGO had the highest rating, which implies that the respondents would tend to do basic and well-known actions. Conversely, the involvement in recycling programs scored the least indicating that more intense or systematic waste management was not done on a regular basis. This trend demonstrates that actions that are simple and available are likely to be undertaken whereas activities that entail extended involvement or institutional interaction might not be as widespread. This pattern reflects previous findings that basic, habitual actions are more easily adopted than activities requiring long-term participation or stronger institutional involvement (Rodríguez-Guerreiro et al., 2024; Ruiz et al., 2021).

In food waste management, the respondents had some elements of practice especially in activities journeys involving orderliness and food handling. Nonetheless, the application of the principles of reduce, reuse, and recycle as applied to food waste had comparatively lower scores. This insinuates that even though respondents might be knowledgeable about food waste issues, making them a habit and practice even despite this is difficult. Unplugging of electrical appliances was noted to be one of the most popular energy waste management procedurals whereas the use of portable power banks scored lowest. This means that the respondents could easily be convinced to undertake basic energy-saving activities that could fit into their habit. Similar conclusions were drawn by Alarinta and Wirtanen (2023), Selena et al. (2021), and

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

Manala-O and Aure (2019), who reported that awareness of food waste does not always result in consistent food waste reduction behaviors.

When it came to water waste management, the highest-rated practice included closing the faucet when not using it whereas the lowest score was given to university-based water conservation programs. This once again points to the distinction between the efforts on an individual level and large institutional engagement. In their entirety, the results suggest that respondents tend to follow simplistic and convenient waste management habits yet less determined to go through with actions that involve more effort, coordination, or participation of structured programs. This trend is a vivid disjuncture between the consciousness and the practice. Similar observations have been noted in studies showing that respondents are generally more willing to engage in direct and uncomplicated conservation practices than in structured programs requiring sustained involvement (Banyan Water, 2023; Singh et al., 2022).

Table 5: Summary of ANOVA on Knowledge, Attitude and Practice

Source of Variation	Df	F-ratio	P-value	F crit	Remarks	Reject or Accept
Knowledge						
Between Groups	3	18.02	0	2.61	With	Reject Null
Within Groups	2648				Significant	
Attitude						
Between Groups	3	16.40	0	2.61	With	Reject Null
Within Groups	2648				Significant	
Practice						
Between Groups	3	53.12	2.5E-33	2.61	With	Reject Null
Within Groups	2648				Significant	

Table 5 presents the summary of the one-way analysis of variance (ANOVA) on the respondents' knowledge, attitudes, and practices on waste management. The results revealed statistically significant differences across the four areas of waste management. Specifically, knowledge showed a significant difference, $F(3, 2648) = 18.02$, $p < .001$, indicating that the respondents' level of knowledge varied depending on whether the item referred to solid waste, food waste, energy waste, or water waste management. Similarly, attitude also differed significantly across the four waste management areas, $F(3, 2648) = 16.40$, $p < .001$, which suggests that respondents did not hold the same level of favorability toward all aspects of waste management. The largest variation was observed in practice, $F(3, 2648) = 53.12$, $p < .001$, indicating that actual waste management behaviors differed more strongly across the four areas than knowledge and attitudes.

These findings suggest that although respondents generally demonstrated a high level of knowledge and positive attitudes toward waste management, these were not consistently reflected in their actual practices. The larger F-value for practice further implies that behavioral implementation may be more influenced by contextual or situational factors, such as access to facilities, convenience, participation in institutional programs, or the nature of the waste management activity itself. In other words, respondents may be more knowledgeable about and favorable toward waste management in principle, yet less consistent in applying such practices in daily situations. This interpretation is supported by previous studies showing that awareness

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

and positive perceptions do not necessarily result in sustained behavior (Liu et al., 2024; Zhang et al., 2024; Odonkor & Sallar, 2021).

Overall, the results indicate a gap between awareness and behavioral implementation. This means that knowing the importance of waste management and having positive attitudes toward it do not automatically guarantee consistent sustainable practices. Therefore, institutional interventions should not only focus on strengthening awareness and attitudes but should also provide practical support, accessible facilities, and behavior-focused programs that can encourage the regular adoption of proper waste management practices. This supports recommendations from previous research emphasizing the role of institutional systems and behavior-focused strategies in strengthening environmental practice (Rodríguez-Guerreiro et al., 2024; Odonkor & Sallar, 2021).

Table 6: Knowledge on Waste Management According to Profile

Factor	Socio-demographic Profile	$\chi 2$	df	p-value	Remarks	Accept or Reject
Solid Waste	Age	9.44	12	0.665	Not significant	Accept
	Sex	8.36	3	0.039	With Significant	Reject
	Educational Attainment	36.10	15	0.002	With Significant	Reject
	Longevity	34.90	9	0.000	With Significant	Reject
	Occupation	36.53	9	0.000	With Significant	Reject
	Department	39.83	21	0.008	With Significant	Reject
Food Waste	Age	29.52	12	0.003	With Significant	Reject
	Sex	6.11	3	0.107	Not Significant	Accept
	Educational Attainment	44.31	15	0.000	With Significant	Reject
	Longevity	32.93	9	0.000	With Significant	Reject
	Occupation	36.38	9	0.000	With Significant	Reject
	Department	64.05	21	0.000	With Significant	Reject
Energy Waste	Age	11.05	12	0.525	Not Significant	Accept
	Sex	3.87	3	0.275	Not Significant	Accept
	Educational Attainment	32.87	15	0.005	With Significant	Reject
	Longevity	35.43	9	0.000	With Significant	Reject
	Occupation	31.55	9	0.000	With Significant	Reject
	Department	52.85	21	0.000	With Significant	Reject
Water Waste	Age	25.98	12	0.066	With Significant	Reject
	Sex	3.23	3	0.358	Not Significant	Accept
	Educational Attainment	43.92	15	0.000	With Significant	Reject
	Longevity	19.23	9	0.023	With Significant	Reject
	Occupation	42.15	9	0.000	With Significant	Reject
	Department	47.28	21	0.001	With Significant	Reject

International Journal of Modern Trends in Social Sciences
IJMTSS
EISSN: 2600-8777
Volume 9 Issue 34 (June 2026) PP 01-20

Results of the chi-square test on interdependence of the socio-demographic profile and the knowledge of the respondent in relation to waste management is given in table 6. The results indicate that a few socio-demographic variables had a significant correlation with knowledge, even though the trend of significance was different among four waste management areas.

The knowledge level from solid waste management was significantly related to sex, level of education attainment, longevity, occupation, and department, whereas age did not. This indicates that age may have a lesser impact on respondent's solid waste management knowledge than the other factors, the academic background, institutional position, and time of stay in the university. Age, educational attainment, longevity, occupation, and department greatly contributed to the level of knowledge in food waste management although sex did not. This shows that the knowledge of food waste can be diverse in terms of the exposure, responsibilities and experience of respondents in the university community. These findings are broadly consistent with previous studies showing that educational background and institutional exposure are important factors in environmental knowledge (Geetha & Rajalakshmi, 2020; Nyampundu et al., 2020).

Significant relationships were found between energy waste management knowledge and educational attainment, longevity, occupation and department, but not age and sex. This leads to the idea that academic background and institutional experience as opposed to gender-specific demographic factors may influence knowledge about energy conservation. In water management waste, educational level, life span, occupation, and department were all considerably linked with knowledge though sex was not important. The table however reported p-value of 0.066 at the age, which exceeds the 0.05 level of significance. This implies that age would have no meaning unless the table is rectified to interpret water waste knowledge as an important factor. Observations were reported by Goh et al. (2021) and Ylaya and Malicay (2022), who emphasized the importance of exposure and context in shaping energy-related awareness.

Collectively, the results indicate that education, job related, department and length of stay were the more stable variables that linked to knowledge of respondents in the various fields of waste management. This implies that not all knowledge is equally distributed among groups and might be determined by the degree of exposure, the duties of the respondents, and by the academic or working environment of the respondent(s). In this regard, waste management education programs can be even more effective in case they are designed to respond to the needs and responsibilities of any particular stakeholder groups in the university. As such, waste management education programs may be more effective if they are tailored to the needs and roles of specific stakeholder groups within the university, which is also supported in related studies on sustainability education and environmental awareness (Muniandy et al., 2021; Yusuf & Fajri, 2022).

Table 7. Attitude On Waste Management According To Profile

Factor	Socio-demographic Profile	χ2	df	p-value	Remarks	Accept or Reject
Solid Waste	Age	9.44	12	0.665	Not significant	Accept
	Sex	8.36	3	0.039	With Significant	Reject
	Educational Attainment	36.10	15	0.002	With Significant	Reject

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

	Longevity	34.20	9	0.000	With Significant	Reject
	Occupation	36.53	9	0.000	With Significant	Reject
	Department	39.83	21	0.008	With Significant	Reject
Food Waste	Age	9.52	12	0.965	Not Significant	Accept
	Sex	4.85	3	0.183	Not Significant	Accept
	Educational Attainment	39.30	15	0.001	With Significant	Reject
	Longevity	23.21	9	0.006	With Significant	Reject
	Occupation	29.50	9	0.001	With Significant	Reject
	Department	42.52	21	0.005	With Significant	Reject
Energy Waste	Age	9.07	12	0.697	Not Significant	Accept
	Sex	7.44	3	0.059	Not Significant	Accept
	Educational Attainment	25.53	15	0.043	With Significant	Reject
	Longevity	14.98	9	0.910	Not Significant	Accept
	Occupation	30.52	9	0.000	With Significant	Reject
	Department	32.17	21	0.056	Not Significant	Accept
Water Waste	Age	9.25	12	0.682	Not Significant	Accept
	Sex	9.86	3	0.020	With Significant	Reject
	Educational Attainment	36.57	15	0.001	With Significant	Reject
	Longevity	29.75	9	0.000	With Significant	Reject
	Occupation	44.29	9	0.000	With Significant	Reject
	Department	53.22	21	0.000	With Significant	Reject

Table 7 shows the chi-square test outcomes on how the socio-demographics profile of the respondents relates to their views on waste management. The results point out that there were a number of socio-demographic variables which were found to be significantly related to attitude, but not all waste management areas had these relationships.

To achieve solid waste management attitude, the relationship between sex, educational attainment, longevity, occupation, and department on attitude was significant, and age was not. This indicates that age might not have a stronger influence on the attitude of respondents to solid waste management compared to their educational background, institutional role and degree of engagement. There were significant relationships with educational attainment, longevity, occupation, and department with food waste management attitude, but no significant relationships existed between age and sex. It means that respondents institutional experiences and academic profile may affect the formation of their attitudes to food waste management than the simple demographic characteristics. These findings are consistent with the view that educational and organizational contexts contribute to the development of environmental attitudes (Manala-O & Aure, 2019; Konstantinidou et al., 2024).

In the case of energy waste management attitude, educational attainment and occupation were the only significant relations with the age, sex, longevity and department insignificant. It indicates that the educational level and job responsibility can be more directly associated with the attitudes of the respondents towards the conservation of energy as opposed to other profile variables. Sex, educational attainment, longevity, occupation and department were found to be significantly correlated with attitude, but age could not be. This implies that perception towards conservation of water might differ according to institutional position, education, and

International Journal of Modern Trends in Social Sciences
EISSN: 2600-8777
IJMTSS
Volume 9 Issue 34 (June 2026) PP 01-20

involvement in the university. Similar arguments were raised by Liu et al. (2023), who found that occupational context can shape environmental attitudes and energy-saving perspectives. On the whole, the results indicate that occupation and educational attainment were one of the most reliable factors related to the attitude towards waste management. This indicates that knowledge, professional responsibility and academic exposure may influence environmental attitudes. The findings also suggest that the attainment of changes in all the attitudes towards waste management might need more specific and context-dependent intervention as opposed to the general campaigns on the creation of awareness. campaigns. The results further imply that improving attitudes toward waste management may require more targeted and context-based interventions rather than relying solely on general awareness campaigns (Konstantinidou et al., 2024; Odonkor & Sallar, 2021).

Table 8: Practice on Waste Management According to Profile

Factor	Socio-demographic Profile	χ2	df	p-value	Remarks	Accept or Reject
Solid Waste	Age	204.62	12	0.000	With significant	Reject
	Sex	12.47	3	0.007	With Significant	Reject
	Educational Attainment	463.53	15	0.000	With Significant	Reject
	Longevity	62.71	9	0.000	With Significant	Reject
	Occupation	481.30	9	0.000	With Significant	Reject
	Department	98.66	21	0.000	With Significant	Reject
Food Waste	Age	201.79	12	0.000	With Significant	Reject
	Sex	7.64	3	0.054	Not Significant	Accept
	Educational Attainment	438.01	15	0.000	With Significant	Reject
	Longevity	67.72	9	0.000	With Significant	Reject
	Occupation	475.30	9	0.000	With Significant	Reject
	Department	90.27	21	0.000	With Significant	Reject
Energy Waste	Age	110.63	12	0.000	With Significant	Reject
	Sex	0.871	3	0.832	Not Significant	Accept
	Educational Attainment	260.18	15	0.000	With Significant	Reject
	Longevity	40.71	9	0.000	Not Significant	Reject
	Occupation	255.77	9	0.000	With Significant	Reject
	Department	36.28	21	0.020	Not Significant	Reject
Water Waste	Age	41.20	12	0.000	With Significant	Reject
	Sex	3.94	3	0.268	Not Significant	Accept
	Educational Attainment	96.90	15	0.000	With Significant	Reject
	Longevity	15.36	9	0.082	Not Significant	Accept
	Occupation	125.64	9	0.000	With Significant	Reject
	Department	33.46	21	0.041	With Significant	Reject

The results of the chi-square test on the associations between the socio-demographic profile and the actual waste management practices of the respondents are given in Table 8. Practice results indicated stronger and more regular significant relationships among various socio-

demographic variables compared to those of knowledge and attitude, indicating that actual behavior might be more subject to group differences.

In the practice of managing solid waste, age, sex, educational attainment, longevity, occupation and department were significantly related. It shows that the real practices of respondents on solid waste management are highly diversified in terms of demographic and institutional. Education, length of stay, occupation and department showed significant association with practice in food waste management practice, whereas sex did not show significant association. The table gives a p-value of age as 0.000 indicating a significant result. Thus, the discussion of the narrative part must be corrected in order not to say so. These findings support earlier studies showing that actual waste-related behavior is shaped by multiple social and institutional factors rather than by awareness alone (Stacchini et al., 2024; Odonkor & Sallar, 2021).

In the case of energy waste management practice, significant factors were age, education level, education length, occupation and department but not sex. But the initial account has seemingly muddled the p-values of age and sex. The final version should rectify this in order to have the discussion well represented by the table. Education level, occupation and the department played significant role in practice in water waste management, whereas sex was not a critical factor. The table indicates that the p-value of longevity (0.082) is not significant at the 0.05 level whereas age was significant at $p = 0.000$. All this information must also be adequately represented in the final story.

The results demonstrate that actual waste management practices are more evidently different in groups compared with knowledge and attitudes. This confirms the previous conclusion that behavior is not as consistent as awareness or perception. It allows believing that although respondents might have a positive attitude towards waste management and might be aware of it on the whole, the possibility or desire to implement it can depend on education, position in the institution, facilities, work habits, and degree of engagement in sustainability initiatives. Such findings support the necessity of group-specific interventions that are practical and lead to not only awareness creation but also eliminate barriers to regular waste management practices. These results reinforce the need for practical, group-specific interventions that not only build awareness but also remove barriers to consistent waste management behavior, as emphasized in previous studies on sustainable behavior and institutional support (Rodríguez-Guerreiro et al., 2024; Muniandy et al., 2021; Liu et al., 2024).

Conclusion

The study established that the respondents were generally highly knowledgeable and positive with managerial attitudes towards waste management on solid waste, food waste, energy waste and water waste management. But in reality, they were merely practiced which means that their knowledge and positive perception do not always translate into a consistent sustainable behaviour. This gap indicates that although respondents have the knowledge on the relevance of waste management, the frequent implementation of practices can still depend on the factor of convenience, accessibility of the facilities, institutional support, and the degree of use in university programs.

This was also shown to have significant differences in knowledge, attitudes and practices when the respondents were grouped based on the selected socio-demographic characteristics. Specifically, education, occupation, department and longevity were some of the more similar variables with the results of waste management. These findings indicate that behavior and

perceptions of waste management are not the same among all stakeholder groups and thus they may hold different perceptions depending on the position of the respondents, their experiences, and exposure in the university setting.

This study contributes to the existing literature by providing a multi-stakeholder perspective on waste management practices in higher education institutions. This is in contrast to studies that consider only the students or a particular segment of the university community, so this study encompasses students, faculty staff, canteen vendors and janitors thus providing a more holistic picture of the perception and implementation of waste handling throughout the campus. Findings can be utilised as a handy foundation to institutional planning, policy-enhancement and creation of more focused sustainability programmes within higher education contexts.

Recommendations

According to the results of the study, Lyceum of the Philippines University-Cavite is suggested to enhance waste management efforts by implementing more specific and comprehensive sustainability programs. Because the findings indicated that respondents tended to be highly knowledgeable and have positive attitudes but seemed to be less committed in actual practice, the university needs to target the interventions that reward concerns behavioral use instead of awareness per se. This can involve frequent campaigns, practical demonstrations, better waste segregation systems, and better involvement in programs of recycling, waste of food, energy saving as well as water saving programs.

Another internationalization strategy that the university can apply entails the development of stakeholder-based interventions which can meet the needs and functions of varying sections of the campus population. The exposure, responsibilities and opportunities of students, faculty and canteen vendors as well as those of janitors are not equal, so individually designed strategies could be more efficient than a universal strategy. Enhancing policy adoption, availing convenient facilities as well as encouraging frequent observation of compliance can further assist towards the integrated practice of waste management.

Future researchers should attempt to verify other factors that can determine waste management behaviour like institutional culture, resource availability, environmental value and behavioral obstacle. Mixed methods or qualitative methodology may also be utilized in future research to learn more about the reason why positive knowledge and attitudes sometimes are not so consistently translated into practice. This can be used to advance the current body of research in waste management in higher education institutions.

Acknowledgements: The researchers would like to express their sincere gratitude to everyone who contributed to the completion of this research paper. First and foremost, they extend their deepest thanks to their thesis adviser, Krisma Joyce S. Salazar, for his unwavering support, guidance, and patience during the whole research process. The researchers also wish to thank the members of the panels, Ms. Trissia Joy Balbin, Ms. Catty Lea Gamo, Mr. Mark Andrew Manoy and their research professor Ms. Azelle Charese A. Tayson, for their constructive criticisms, time, and suggestions which has greatly improved the quality of this study.

Funding Statement: The research was funded by Lyceum of the Philippines University-Cavite for the publication of the study.

Conflict of Interest Statement: The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the International Journal of Modern Trends in Social Sciences (IJMTSS)

Ethics Statement: This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. Ysabel Kristine S. Lopez and Alyssa Kyle N. Cañete were responsible for conceptualization, writing manuscript, and supervising the research. Mary Abigail M. Roslin and Amber Mae Marbella handled the data collection, analysis, and interpretation. Andrea Isabel T. Lina contributed to the literature review, data encoding, and proofreading. Krisma Joyce S. Salazar ensured alignment with academic standards, editing and offered continuous feedback throughout the study. All authors read and approved the final version of the manuscript prior to submission.

References

Alarinta, S., & Wirtanen, G. (2023). A study of the behavioral and environmental factors influencing food waste in university students. ScienceDirect. https://doi.org/10.1016/j.sdsci.2023.1000545

Alatar, M.A. (2020). Food Waste Knowledge, Attitudes, and Behavioral Intentions among University Students. Journal of Agriculture, Food Systems, and Community Development, Volume 9 Number 3 (2020). https://doi.org/10.5304/jafscd.2020.093.004

Antalan, M. F., & Tungpalan, K. A. (2020). Food Safety and Waste Management Practices Among Canteen Operators of Schools and Colleges: Cauayan City, Isabela. International Journal of Psychosocial Rehabilitation, 24(7), 644–651. https://doi.org/10.37200/V24I7/14028.

Badrum, S. & Mapa, M. (2020). Village-Level Knowledge, Attitude, and Practice (KAP) on Solid Waste Management in Penampang, Sabah. LPPM UPN "Veteran" Yogyakarta Conference Series Proceeding on Political and Social Science (PSS), Volume 1Number 1 (2020): 148-160. https://doi.org/10.31098/pss.v1i1.191.

Banyan Water. (2023). Water management for campuses: Solutions and savings. Banyan Water. https://banyanwater.com/blog/water-management-for-campuses/

Bation, N. D., & Pudan, J. C. (2024). Exploring the influence of environmental knowledge on solid waste disposal practices among college students at a community college. International Journal of Social Science and Humanities Research, 7(4), 54–60. https://doi.org/10.47191/ijsshr/v7-i04-54

Bhandari, P. (2020). What is quantitative research? | Definition, uses & methods. Scribbr. https://www.scribbr.com/methodology/quantitative-research/

Bielig, M., Malewski, L., Bandurski, K., Kutzner, F., Vogel, M., Klingert, S., Gorzenski, R., & Kacperski, C. (2025). Heating reduction as collective action: Impact on attitudes, behavior and energy consumption in a Polish field experiment. arXiv. https://arxiv.org/abs/2504.11016

Geetha, R., & Rajalakshmi, S. (2020). Association of socio-demographic characteristics with knowledge, attitude, and practice towards solid waste management. Journal of Extension Education, 32(4), 6613–6620. https://doi.org/10.26725/JEE.2020.4.32.6613-6620

Goh, T. L., Tan, T. C., & Raj, P. S. (2021). Energy conservation behaviors among urban households in Singapore. Energy Reports, 7, 489–495. https://doi.org/10.1016/j.egyr.2021.02.009

Hassan, N., & Rosli, N. (2022). Knowledge, attitude and practice on waste management among university students in Malaysia. 48, 1-15.

Konstantinidou, A., Ioannou, K., Tsantopoulos, G., & Arabatzis, G. (2024). Citizens' attitudes and practices towards waste reduction, separation, and recycling: A systematic review. Sustainability, 16(22), 9969. https://doi.org/10.3389/fpubh.2024.1328583

Lange, S. L., Senekane, M. F., & Naicker, N. (2022). Understanding the socio-demographic profile of waste re-users in a suburban setting in South Africa. Resources, 11(5), 45. https://doi.org/10.3390/resources11050045

Liu, S., Li, X., & Wang, J. (2023). Occupational influence on energy conservation behavior: A case study of renewable energy professionals. Energy Policy, 91, 230-238. https://doi.org/10.1016/j.enpol.2023.06.018

Liu, S., Liu, X., Li, Y., Yang, D., Li, F., & Yang, J. (2024). College students' knowledge, attitudes, and practices of garbage sorting and their associations: A cross-sectional study

of several universities in Beijing, China. Frontiers in Public Health, 12, Article 1328583. https://doi.org/10.3389/fpubh.2024.1328583

Mabadahanye, K., Dalu, M.T.B., Munyai, L.F., Dondofema, F., & Dalu, T. (2025). Perceptions and knowledge of water and wastewater treatment plant workers regarding plastic pollution and removal. Sustainability, 17(1), 361. https://doi.org/10.3389/fpubh.2024.1328583

Manala-O, S., & Aure, P. a. H. (2019). Food waste behavior of young fast-food consumers in the Philippines. ResearchGate.https://www.researchgate.net/publication/336675631_Food_Waste_Behavior_of_Young_Fast-food_Consumers_in_the_Philippines

Marwood, S., Byrne, N., McCarthy, O., Heavin, C., & Barlow, P. (2023). Examining the relationship between consumers' food-related actions, wider pro-environmental behaviours, and food waste frequency: A case study of the more conscious consumer. Sustainability, 15(3), 2650. https://doi.org/10.3390/su15032650

McCombes, S. (2019). Descriptive Research | Definition, Types, Methods & Examples. Scribbr. https://www.scribbr.com/methodology/descriptive-research/

Molina, R. A., & Catan, I. (2021). Solid Waste Management Awareness and Practices among Senior High School Students in a State College in Zamboanga City, Philippines. Aquademia, 5(1), ep21001. https://doi.org/10.21601/aquademia/9579

Muniandy, G., Anuar, M. M., Foster, B., Saputra, J., Johansyah, M. D., Khoa, T. T., & Ahmed, Z. U. (2021). Determinants of Sustainable Waste Management Behavior of Malaysian Academics. Sustainability. https://doi.org/10.3390/su13084424

Nyampundu, K., Mwegoha, W. J. S., & Millanzi, W. C. (2020). Sustainable solid waste management Measures in Tanzania: an exploratory descriptive case study among vendors at Majengo market in Dodoma City. BMC Public Health, 20(1). https://doi.org/10.1186/s12889-020-08670-0

Qaderi, P., Muradi, M., & Haqiqat, S., (2021). Assessment of Public Awareness Level Regarding Solid Waste Management: A Case Study of Pol-e-Khumri, Afghanistan. International Journal of Innovative Research and Scientific Studies, 4 (4) 2021, pages: 200-204. https://doi.org/10.53894/ijirss.v4i4.85.

Odonkor, S. T., & Sallar, A. (2021). Correlates of household waste management in Ghana: Implications for public health. Proceedings of the World Conference on Waste Management, 3(1), 43–57. https://doi.org/10.17501/26510251.2021.3104

Prakasha, G.S., Chakraborty, R. and Kenneth A., (2021). Energy saving, waste management, and pollution free steps for university campuses. Research Gate Publication. https://doi.org/10.1063/5.0066325.

Rodríguez-Guerreiro, M.-J., Torrijos, V., & Soto, M. (2024). A review of waste management in higher education institutions: The road to zero waste and sustainability. Environments, 11(12), 293. https://doi.org/10.3390/environments11120293

Ruiz, Q., Sagaral, R., Tumulak, N., & Discipulo, B. (2021). Solid Waste Management Awareness and Practices of Saint Michael College of Caraga. Philippine E-Journals, 2(1). https://ejournals.ph/article.php?id=16571

Selena, A., Stewart, A., Smith, E., Warne, T., & Byker Shanks, C. (2021). Consumer perceptions, behaviors, and knowledge of food waste in a rural American state. Sustainability, 13(22), 734785. https://doi.org/10.3389/fsufs.2021.734785

Singh, V., Mehta, R., & Patel, M. (2022). The impact of academic discipline on environmental attitudes: A study on water conservation. Sustainability, 14(1), 56-69. https://doi.org/10.3390/su14010056

Sirisilla, S. (2023). Bridging the Gap: Overcome these 7 flaws in descriptive research design. Enago Academy. https://www.enago.com/academy/descriptive-research-design/

Stacchini, L., Nucci, D., Romano, N., Villa, M., Passeri, C., Ferranti, R., & Gianfredi, V. (2024). Association between socio-demographic characteristics and household food waste behaviors among university students in Italy: The UniFoodWaste study. Sustainability, 16(21), 9279. https://doi.org/10.3390/su16219279

Yap, L. H., & Sharaai, A. H. (2022). Relationship between level of awareness and willingness to participate in recycling. Proceedings of the World Conference on Waste Management, 3(1), 43–57. https://doi.org/10.17501/26510251.2022.3104

Ylaya, V. J. V., & Malicay, L. G. (2022). Assessment of Energy Savings Potentials at University in Lanao del Norte, Philippines. International Research Journal of Advanced Engineering and Science, 7(2), 22–28.

Yu, Y., Yi, S., Nan, X., Lo, L. Y.-H., Shigyo, K., Xie, L., Wicaksana, J., Cheng, K.-T., & Qu, H. (2023). FoodWise: Food waste reduction and behavior change on campus with data visualization and gamification. arXiv. https://doi.org/10.48550/arXiv.2307.12882

Yusuf, R., & Fajri, I. (2022). Differences in behavior, engagement and environmental knowledge on waste management for Science and social students through the campus program. Heliyon, 8(2).

Zhang, T., Liu, M., Zhou, D., Ma, Z., Chen, L., Wu, D., Diao, H., Wang, W., Li, D., & Zhen, Q. (2024). College students' knowledge, attitudes, and practices of garbage separation. Frontiers in Public Health. https://doi.org/10.3389/fpubh.2024.1328583https://doi.org/10.1016/j.heliyon.2022.e08912