

**ENVIRONMENTAL AWARENESS STRATEGIES AND UNDERGRADUATES'
ATTITUDE TOWARD SOLID WASTE DISPOSAL IN TERTIARY
INSTITUTIONS IN CALABAR EDUCATION ZONE,
CROSS RIVER STATE, NIGERIA.**

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ABSTRACT

This study examined the relationship between environmental awareness strategies and undergraduates' attitude toward solid waste disposal in tertiary institutions within the Calabar Education Zone, Cross River State. The study focused on two main environmental awareness strategies: Print Media, Community Announcer, with students' attitudes toward solid waste disposal as the dependent variable. A descriptive survey research design was adopted, using proportionate stratified random sampling, a sample of 380 students was selected. Data were collected through a structured questionnaire, which included both personal variables and items for the independent and dependent variables. Data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (Pearson Product-Moment Correlation) at the 0.05 significance level. Findings revealed that all individual environmental awareness strategies of print media, community announcers, had significant positive relationships with undergraduates' attitudes toward solid waste disposal. Based on the findings, it was recommended that tertiary institutions, community leaders, environmental agencies, and policymakers implement coordinated awareness programs, workshops, and club activities to enhance sustainable solid waste management among students.

Key words: Environmental awareness, environmental awareness strategies, undergraduate attitude, solid waste, solid waste disposal, tertiary institution.

Introduction

The management of solid waste in Nigerian tertiary institutions has become a pressing environmental and public-health issue. Increasing student populations, expanding campus facilities and changing consumption patterns have led to rising quantities of plastics, food

remnants, paper, glass and other solid wastes on campuses. These materials, when poorly handled, cause blocked drains, foul odours, visual blight and heightened risk of communicable disease among students and staff. As one study of the University of Calabar noted, campus waste practices contribute directly to student health outcomes and must be addressed through coordinated strategies and infrastructure improvements (Agbor-Obun Dan, Moses, Ukpata and Akpa, 2023).

Attitudes held by undergraduates their beliefs, feelings and predispositions toward environmental behaviour are central to how waste is disposed of on campuses. Research conducted in the Calabar Education Zone found that education level and exposure to environmental messages influence attitudes toward solid waste disposal; as the authors put it, It is evident that the more educated people are the more they are exposed to information about solid waste and the environment. (Arikpo, Efut & Asuquo, 2023).

According to Ekpo, (2021), Environmental awareness strategies are varied; they operate through information provision, social modelling, skills development and repeated reminder cues. Print media remains a widely used awareness tool on Nigerian campuses because of its visibility and low cost. Studies of media practice in Nigeria note that newspapers, banners and posters still play a role in public education for example, investigations into Nigerian print coverage by Ekpo, (2021) concluded that print outlets do contribute to public awareness of environment issues and often act as a platform for institutional messaging. On campus, well-designed posters and strategically placed banners act as continuous reminders that can help maintain environmental norms over time. Electronic media from campus WhatsApp groups and Facebook pages to local radio jingles and institutional PA announcements has expanded environmental outreach possibilities. Ekpo, & Okocha, (2020). Social-media based campaigns in Nigeria have been shown to create measurable awareness on plastic pollution and single-use plastics; as one review concluded, the social media

plays an important role in creating awareness on plastic pollution (Ekpo, A. U., Effiom, A., & Akpan, B. (2021).

Traditional local communication methods remain important, especially for students living off campus or in communities where internet penetration is limited. The community announcer or town crier is still used across Nigerian communities to mobilise residents for sanitation days and local drives; scholarship on this practice emphasises that local announcements are often trusted and effective when repeated and culturally framed. For example, analyses of town-crier roles in Nigerian communities highlight their value in mobilising collective action for development and public health. Akpan-Atata, E. (2024). Where campus campaigns connect with local community announcements, messages are reinforced across living and learning spaces. Crucially, awareness alone is rarely sufficient. Active engagement through pro-environmental workshops builds skills and agency; workshops that include demonstrations of waste segregation, composting and low-cost recycling techniques convert abstract knowledge into practicable routines. Empirical studies from the University of Calabar area report that students exposed to practical trainings report improved knowledge and a greater willingness to participate in clean-ups and segregation initiatives (Agbor-Obun Dan et al., 2023). Likewise, pro-environmental clubs provide ongoing peer reinforcement: clubs organise clean-up drives, recycling projects and advocacy campaigns and create micro-cultures in which pro-environmental behaviour is socially valued and rewarded. As educational theory argues, action-based and peer-supported interventions are more likely to produce sustained attitude change than one-off messages.

Despite the presence of these strategies on many campuses, waste disposal problems persist in the Calabar Education Zone. Local assessments point to a gap between awareness activities and actual everyday practices: bins may be few or poorly sited, collection schedules inconsistent, and

campaigns sometimes episodic and uncoordinated with practical infrastructure. The persistence of open dumping, blocked drains and littered campus spaces indicates that awareness strategies need to be evaluated not only for their reach but also for how they interact with enabling conditions policy, infrastructure and social incentives that allow attitudes to translate into behaviour. Oladele, O. I., & Adegboye, F. (2018).

This study therefore examines the relationships between awareness strategies (print media, community announcer and undergraduates' attitudes toward solid waste disposal in tertiary institutions in the Calabar Education Zone. Specifically, it asks which strategies are most strongly associated with positive attitudes, how combined strategies perform compared with single channels, and what practical barriers exist to converting attitudes into consistent disposal practices.

Statement of hypotheses

The following hypotheses were formulated for the study:

1. There is no significant relationship between print media and undergraduates' attitudes toward solid waste disposal.
2. There is no significant relationship between community announcers and undergraduates' attitudes toward solid waste disposal.

Literature review

Print media and undergraduates' attitude toward solid waste disposal in tertiary institutions

Print media (posters, billboards, flyers, banners, handbills) remains a commonly used tool for environmental communication especially in settings like tertiary institutions, where there's a high concentration of people and frequent foot traffic. As a static, visible medium, print media can serve as a constant visual reminder of appropriate waste-disposal norms. When properly designed and strategically placed, print media campaigns can raise awareness about waste problems,

highlight consequences of improper disposal, and communicate desired behaviours (e.g. use of bins, recycling) to a large audience.

Comparative analysis of billboard posters as a means of curbing littering and recycling waste in the University of Nigeria, Nsukka and Enugu State University of Science and Technology by Agbani, Ezeah & Paul-Kayode, (2024). This study compared how billboard posters as a communication strategy affected littering and recycling behaviours among students in two Nigerian universities (UNN and ESUT, Agbani). It used a mixed-method approach to assess visibility, message retention, and self-reported behavioural influence. The study reports that billboard posters increase awareness, but their effectiveness varies significantly depending on placement (location), design appeal, and the presence of complementary waste-management initiatives on campus. UNN students showed a slightly higher response compared to ESUT, a difference attributed partly to better waste-management structures at UNN. Print media can work but only when combined with supporting infrastructure and institutional commitment. Posters alone are not enough; their messages need reinforcement through actual waste-management facilities, functional collection systems, and supportive policies.

Ekong and Nya (2019) utilized a cross-sectional survey design to assess environmental knowledge, attitude and behaviour among undergraduates in a southern Nigerian University. Students of a university in Akwa Ibom State formed the study's population while a sample of 185 respondents was selected using stratified random sampling technique. Data collection was with a questionnaire and the study's aims involved ascertaining awareness and sources of information concerning inappropriate waste disposal methods and their attitude towards the issue of waste disposal. Data analysis with descriptive statistics revealed that the students did have very appreciable awareness levels of inappropriate waste disposal methods with print media such as newspapers, magazines

and books serving as their sources of information. The result also showed that the respondents did have very favourable dispositions towards the issue of waste disposal. The finding of this study was accepted as being necessary for this review due to its assessment of not only students' awareness of inappropriate waste disposal methods and sources of information but also their disposition towards the issue of waste disposal.

Opaleye (2021) examined the perception of undergraduate students towards waste disposal by focusing on students of Obafemi Awolowo University, Ile-Ife, Nigeria. Adopting a descriptive survey research design, students with a total population of 11,354 of the school in question formed the population. A sample of 277 participants was selected purposively and data was collected using a questionnaire. The study's objectives included verifying students' awareness levels of waste management and their waste disposal tendencies. Analysis of collected data was with frequency counts and percentage scores. The result revealed them displaying an unappreciable level of awareness towards waste management and same was revealed as it concerned their tendencies towards waste management. From the study's further enquiries, it was revealed that the purposiveness of selecting the students for the study was based on their non-exposure to print materials concerning waste management methods. The study of Opaleye (2021) was deemed pertinent for this review on the grounds that it ascertained the perception of students towards waste disposal.

Community Announcer and undergraduates' attitude toward solid waste disposal in tertiary institutions

Community announcers refer to oral information dissemination via town criers, campus public address systems, or student leaders. Okon (2022) highlighted that community announcers remain a credible channel for raising awareness about sanitation and proper waste disposal,

particularly for students who may not regularly access other media. Ogar et al. (2019) observed that students exposed to campus announcements on clean-up campaigns showed higher levels of participation and positive attitude toward waste disposal. Akpan-Atata (2021) reported that combining community announcements with other media interventions produces “more sustained attitudinal change and behavioural intention among students”. Community announcers are effective in reinforcing social norms and credibility, positively influencing students’ attitudes, especially when combined with other awareness strategies. Edewor (2025) adds that announcements delivered by respected community figures carry greater credibility and are more likely to influence behaviour than anonymous messages. Community announcers reinforce social norms and credibility, influencing attitudes positively. Their effect is stronger when combined with print and electronic media. Community announcers’ traditional communication mechanisms such as town-criers, campus PA systems, student-body announcements, or community-based oral messaging represent locally grounded and culturally relevant methods of conveying environmental messages.

In many Nigerian contexts, oral communication continues to be influential, especially among communities and populations less engaged with print or digital media. The concept of combining multiple strategies in green campaigns including community outreach, announcements, seminars, social media and practical incentives has been promoted in tertiary institutions in Nigeria. A 2025 paper evaluating green campaign strategies in HEIs reported that such multi-channel efforts (social media campaigns, seminars, incentive-based waste bins) significantly improved waste management practices among students and staff. Though not isolating community announcers alone, this shows that locally rooted communication and social engagement, alongside media and structural support, can reinforce positive attitudes and behaviour. High credibility and cultural

resonance community announcements or local leadership are often trusted more than anonymous media messages. Ability to reach students off-campus or in areas with limited internet access. Opportunity for direct mobilization for cleanup events, workshops, or club meetings.

Okon, (2022) stated that Community announcers / mobilizers are individuals or local media channels that actively inform, remind, persuade and organize residents around public issues here: solid waste disposal. Their channels include door-to-door mobilizers, town-criers/PA systems, community radio, religious/market leaders, and organised volunteer groups. Community mobilization theory and diffusion-of-innovations explain their role: announcers act as opinion leaders and local change agents who spread new practices (e.g., source separation, scheduled disposal) through trusted social networks.

Studies from Okon (2022) and other contexts show that awareness campaigns led by community-level actors or broadcast media reliably increase public knowledge and awareness about proper waste disposal. Interventions involving community participation or broadcast messages often produce statistically significant improvements in knowledge and reported attitudes toward solid waste disposal. However, knowledge gains do not always translate fully into long-term behaviour change without accompanying infrastructure or enforcement.

Empirical evidence suggests that community-based communication and participation significantly influence individuals' attitudes toward solid waste disposal, even though few studies use the exact term community announcer. In Nigeria, Emmanuel and Ofili (2023) investigated the effect of community participation on domestic solid waste management in Uyo and found that environmental education and community mobilization led to significant improvement in knowledge and positive attitudes toward proper waste disposal. They concluded that when people are exposed to structured community-level sensitization, their environmental responsibility

increases. This finding implies that community announcers who serve as local communication agents can play a critical role in shaping environmental attitudes.

Methodology

Design

A survey design adopted for this study is a descriptive survey. The descriptive survey is particularly suitable for this study because it allows for observation and description of existing conditions without manipulating variables.

Population

The population of this study comprises of students of Faculties of Education in the College of Education, University of Calabar, University of Cross River State (UNICROSS), University of Education and Entrepreneurship, Akamkpa and Cross River State School of Health Technology, Calabar.

Sample

The sample of three hundred and eighty (380) students, this sample refers to the subset of students selected from the population to represent all undergraduates in the tertiary institutions of the Calabar Education Zone.

Instrumentation

Data for the study was gathered through the use of questionnaire; titled environmental awareness strategies on undergraduates' attitudes toward solid waste disposal Questionnaire (EASUATSWDQ). The questionnaire was divided into two sections; Section A contain Demographic Information (Personal Variables). This section collects information on age, gender, level of study, and faculty/department and section B contains items with five questions on each

variable investigated during the study. The instrument adopted a four-point linkert questionnaire with the options of strongly agree, Agree, strongly disagree and disagreed.

Results and discussion

Hypothesis one

There is no significant relationship between Print Media exposure and undergraduates' attitude toward solid waste disposal. The independent variable is print media and dependent variable is undergraduate attitude towards solid waste disposal. The result obtained from the analysis is presented in table 1.

TABLE 1

Pearson Product Moment Correlation for the relationship between print media and undergraduate attitude towards solid waste disposal (N=380)

Variable	\bar{X}	SD	r-ratio	p-level
Print media	17.64	3.81		
undergraduate attitude towards solid waste disposal	29.65	3.95	.353*	.000

*Significant at .05 level, $p < .05$; $df = 298$

The results in Table 1 showed that the mean score obtained by the subjects as regards print media is 17.64 with an SD of 3.81 while the mean score obtained by the subjects as regards undergraduate waste management behaviour is 29.65 with an SD of 3.95. Further examination of the results revealed that the obtained r-ratio of .353 with a p-value of .000 is said to be statistically significant since the p-value is less than .05. This indicated that the null hypothesis which stated that print media have no significant relationship with undergraduate attitude towards solid waste disposal was rejected. Based on this, it then implied that indigenous print media had significant positive relationship with undergraduate attitude towards solid waste disposal.

Hypothesis two

There is no significant relationship between Community Announcer influence and undergraduates' attitude toward solid waste disposal. The independent variable here is the community announcer while the dependent variable is undergraduate attitude towards solid waste disposal. The result obtained from the analysis is presented in table 2.

TABLE 2

Pearson Product Moment Correlation for the relationship between community announcer and undergraduates' attitude towards solid waste disposal (N=380)

Variable	\bar{X}	SD	r-ratio	p-level
Community announcer	18.38	2.81	.167*	.000

undergraduates' attitude towards solid waste disposal	29.65	3.95
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*Significant at .05 level, $p < .05$; $df = 298$

The results in Table 8 showed that the mean score obtained by the subjects as regards the community announcer is 18.38 with an SD of 2.81 while the mean score obtained by the subjects as regards undergraduate attitude towards solid waste disposal is 29.65 with an SD of 3.95. Further examination of the results revealed that the obtained r-ratio of .167 with a p-value of .000 is said to be statistically significant since the p-value is less than .05. This indicated that the null hypothesis stands rejected thereby the finding implied that the community announcer have a significant positive relationship with undergraduate attitude towards solid waste disposal.

Discussion of findings

The first hypothesis states that there is no significant relationship between Print Media and undergraduates' attitude toward solid waste disposal.

The result of the first hypothesis revealed that print media campaigns is a significant correlate of undergraduate waste management behaviour. This meant that the null hypothesis was rejected while the alternate was accepted. By implication, the finding is that print media campaigns have a positive relationship with undergraduate waste management behaviour.

The analysis revealed that Print Media exposure has a significant positive relationship with undergraduates' attitude toward solid waste disposal. This indicates that students who are more exposed to newspapers, magazines, brochures, and posters on environmental management are more likely to adopt positive attitudes toward proper waste disposal.

This finding is consistent with Udeani (2019), who observed that print media plays a significant role in informing and shaping perceptions of students about environmental issues. Print media provides

reliable, structured, and tangible information, allowing students to reflect on the importance of proper waste management. It suggests that institutions should increase the circulation of environmental print materials to strengthen awareness and pro-environmental behavior among undergraduates. The finding also is in consonance with that of Ekong and Nya (2019) who ascertained that Data analysis with descriptive statistics revealed that the students did have very appreciable awareness levels of inappropriate waste disposal methods with print media such as newspapers, magazines and books serving as their sources of information. Also, with that of Aderiye and Ovwromoh (2024) who revealed that the students had low awareness levels with corresponding unappreciable tendencies towards best waste disposal practices, and the challenges in the schools as reported by the students included indicating that there are no posted notices (banners, posters, etc) concerning appropriate waste disposal required in the school.

The second hypothesis stated that Community Announcer does not significantly influence undergraduate Attitude toward Solid Waste Disposal in the Calabar Education Zone.

The result of the study's second hypothesis revealed that community announcer is a significant correlate of undergraduate attitude towards solid waste disposal. This meant that the study's third null hypothesis was rejected while the alternate hypothesis was accepted. Thus, the finding indicates that pro-environmental clubs is associated with the undergraduate waste management behaviour.

The results indicated a significant positive relationship between Community Announcer influence and students' attitude toward solid waste disposal. Announcements from community leaders or local environmental advocates were found to enhance students' awareness and compliance with proper waste disposal practices. This corroborates Okon (2018), who noted that messages delivered by trusted community figures are more persuasive because of their credibility and cultural relevance.

The finding suggests that involving community leaders in awareness campaigns within tertiary institutions can further improve students' pro-environmental attitudes.

Conclusion

The essence of this study was to investigate the environmental awareness strategies and undergraduates' attitude toward solid waste disposal in tertiary institutions in Calabar Education Zone, Cross River State, Nigeria. In summary, the research highlights the critical role of structured environmental awareness interventions in shaping undergraduates' attitudes and emphasizes the need for tertiary institutions, policymakers, and environmental stakeholders to adopt coordinated strategies for promoting proper waste management practices.

Recommendation

Based on the findings of this study, the following recommendations are made to improve undergraduates' attitude toward solid waste disposal in tertiary institutions:

1. Universities should regularly publish newsletters, posters, and digital campaigns on proper waste management to keep students informed and motivated.
2. Organize regular environmental workshops and seminars: Institutions should provide hands-on learning experiences that enhance students' knowledge and practical skills in solid waste management.
3. Local leaders and community-based environmental advocates should actively participate in campus awareness programs to deliver credible and persuasive messages.

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