

MANAGEMENT OF WASTE MATERIALS IN EKITI STATE UNIVERSITY, ADO EKITI

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Abstract

Management of waste in Ekiti State University is highly important to students, university community, teaching and non-teaching staff. University community could be properly managed to avoid illness and diseases of various kinds. The study investigated the management of waste materials in Ekiti State University. The population of the study was 750 respondents comprising 600 students and 150 members of staff within Ekiti State University. The entire population was used as sample. The instrument used for collecting data for the study was Management of Waste Materials Questionnaire (MWMQ). It was divided into four sections; A, B, C, D. Section A was sought to collect information on the demographic data of the respondents. Sections B to D consisted of items to measure nature of the waste materials, management of waste materials and the extent to which the waste materials are being disposed within the university community. The instrument used for the study was subjected to scrutiny by experts in Health Education and in the area of Tests and Measurement for face and content validity. The experts determined the level of appropriateness of the instrument in measuring what they are supposed to measure. The reliability coefficient of the instrument was determined using cronbach's Alpha and yielded 0.72. The findings of this study revealed that littering of classrooms with bags, biscuit, groundnut, orange peels and sachet water indicate the nature of the waste materials within the university. It also revealed that recycling method be adopted in managing the waste materials within the university. Based on these findings, it was recommended among others that departments in each of the universities can work on recyclable materials. This can be achieved by making use of alternately garbage. Academic community must look into relevant research that will generate money from recycled gar.

Keywords: Management, Waste Materials, University Environment, Refuse Disposal

Introduction

Universities play an important role in forming behavioral patterns that have positively impact on the society. Universities bear a vicarious responsibility in ensuring that sustainable plans and policies are imbibed in the society. Through their expertise, they have the capacity to increase awareness, knowledge, technology and tools necessary to promote and sustain best

practices within the environment in which they are located. Ekiti State university environment is crucial to staff working conditions and how the activities of the environment are organised. It has been observed in recent times that the role the environment plays in the university's development process cannot be relegated to the background. For this and several other reasons, environmental issues now occupy a centre stage in academic

discourse and other public areas, both at the national and international levels. Environment can either be cultural or socio-economic environment. According to Uchegbu (2012), environment is a kind of system within which organisms interact with the physical environment, comprising air, water and land.

But perhaps the most serious and worrisome in Ekiti State University is the physical environment in terms of the low level of sanitation and gross environmental indiscipline in our cities and communities. Pollution of the environment has come to be a problem facing man.

According to Odukoya (2010), pollution of water refers to an impairment of water quality that interferes with the use of water, sewage, industrial wastes and agricultural wastes. It is necessary to manage waste materials in Ekiti State University in order to make the environment clean. Management of waste materials is crucial to students, lecturers and administrative staff of Ekiti State University, Ado Ekiti. Improper management of industrial, domestic, medical and agricultural wastes are the major cause of environmental degradation leading to poor environmental health and diseases. Waste management usually relates to all kinds of planned activities concerned with the proper handling and disposal of waste from the point of generation to the point of final disposal. Waste materials managements all the activities and actions required to manage waste from its inception to its final disposal. It is obvious that many diseases are likely to be contracted from unsanitary condition which results from improper waste disposal practices (Ahmed, 2015). This includes amongst other things collection, transport, treatment and disposal of

waste together with monitoring and regulation.

Waste management is the most pressing environmental challenge faced by urban and rural areas of any society. Waste are generated during the extraction of raw materials, the processing of raw materials into intermediate and finished products, the consumption of final products, or other human activities in the society (Sankoh, Yam & Tran, 2023). Nigeria with the population exceeding 170 million. The management of waste, especially solid waste (non-liquid and non-gaseous by-products of human activities that are deemed useless and of no economic value) is an essential aspect of daily life and has been an issue once human beings started forming enough communities to put stress on natural and material resources (Jubril, Ibrahim & Jamilu, 2012). The human being has proved to be the most culpable of the species in the desecration of the environment. Most human activities, and especially in the process of developing, invariably create waste, much of which can pose risks to the environment and to public health, especially if not well managed (Zhuang, Kimbal, Hogg, Zhao, Oechel, Cassano & Running, 2008).

Waste management facilities and specific treatments, transport and sorting plants for recyclable materials such as paper, waste collection, multi-material and industrial waste similar. The success of the treatment of waste fractions is mainly linked to the selection that is made to the origin, greatly improving the recovery rate the solutions starting from basic systems for manual or mechanical and more complex plants involving specific machinery and equipment more and more sophisticated to get results in full compliance with current regulations regarding waste disposal, a mixed

recycling service to include cardboard, paper, newspapers, plastic films and bottles and steel and aluminum cans, which can all be put into one bin. There's no need to separate them, so the increase of recycling rate simply and more effectively. It not only saves time and hassle, but reduces costs by avoiding disposal to landfill. Waste materials generated are categorized into solid, liquid and gaseous substances. Basis (2014) earmarked on the three types of wastes by their consistency as follows: solid waste which is the waste materials that contain less than 70 percent water. They include garbage food wastes, rubbish paper, plastic, wood, metal, used containers, glass, demolished products bricks, masonry, sewage treatment residues, and sludge from domestic sewage and discard materials. Liquid wastes are water that contain 1% solid, may contain high concentration of salt and metals. While gaseous wastes are substances in the atmosphere that are generated by the activities of man in such a concentration that interfere with health, safety, man's comfort, animals and vegetation. In tertiary institutions, the wastes generated in the learning environment are more of solid and liquid. In Ekiti State, Nigeria and other developing countries, some of the prominent waste management problems witnessed include but not limited to indiscriminate dumping, poor means of storage, inefficient transportation and insanitary disposal. All these problems are all a function of certain factors such as the population increase, attitude of people towards waste management, location of open dump sites without consideration to the surrounding land uses.

The problem of waste materials disposal in Nigeria has become a national malaise. Filth is an eyesore and a

nuisance. It signifies decadence and backwardness. The common methods of managing waste are land filling, use of incineration, composting, burning and anaerobic digestion. Incineration, composting and anaerobic digestion are volume reducing technologies. The university community members as observed by the researcher usually dump refuse anywhere on the campus but lack the health and social implications that such poor habits may constitute to the environment. People need to be aware and have the knowledge of the implications of their actions on the environment. Thousands of lives are lost into environment-related diseases such as cholera, diarrheal, malaria fever, typhoid fever, river blindness and so on. Majority of people lives in filthy, cockroaches, rats, and mosquitoes-infected environment. Seepage from refuse dump often pollutes the underground and surface water. Inability of the students and workers of Ekiti State University to manage the waste materials could result in polluting the environment.

Waste is an inevitable by-product of socio-economic and institutional activities. As long as man is in existence, he uses, stores up, and disposes off materials (wastes) thus making him inseparable from waste. Solid waste could be defined as non-liquid and non-gaseous products of human activities, regarded as being useless (Babayemi & Dauda, 2009). Consequent upon which the strategies for the management of the waste generated vary in terms of the region and the available resources.

Statement of the Problem

The issue of waste management on the campus environment particularly in the residential area of the campus which are not under the control of the

school management. This has been a serious concern to stakeholders in the university, as the menace of poor management tends to be on the high gear in such area. Beauty of any environment lies on its good sanitary condition. This is because, when environment is clean the life of every citizenry is not threatened by illnesses and diseases.

It appears that proper refuse disposal which involves the collection of wastes is not properly done making the university environment look dirty sometimes. It has been observed that undergraduates decorate the school environment with banana peels, groundnut shells, corn cobs, sachet water bags, biscuit wrappers, empty can drinks to mention but a few. Students use sanitary towels, papers and in some cases, this situation blocks the toilet. Some students urinate and defecate on bare floors of university environment. The porters negligence to duties constitute environmental nuisance in the residential apartments of the undergraduates in the universities. The university staff are also not exempted. This unhealthy scenario is mostly experienced during the weekends and examination periods. When there is epileptic power outage resulting in water shortage, the conveniences are heaped with mounds of faeces waiting for the attention of hostel porters.

Despite the effort and policies to advance the frontier of solid waste management at both national and local levels by the management of Ekiti State University, it appears that the menace of waste materials is causing more concern mainly because of the technical, financial, institutional, economic and social constraints that are associated with its management. These situations call for investigation of the management of waste materials in Ekiti State University.

Purpose of the study

The main purpose of the study was to investigate the management of waste materials in Ekiti state university. Specifically, the study:

1. examined the nature of the waste materials within the University Community
2. determined how waste materials are being managed within the University Community
3. investigated the extent to which waste materials generated are appropriately disposed within the University Community

Research Questions

The following research questions are raised:

1. What is the nature of the waste materials within the University Community?
2. How are the waste materials being managed within the University Community?
3. To what extent are waste materials generated appropriately disposed within the University Community?

Methodology

The study adopted descriptive survey research design. Descriptive survey research design describes the existing situation regarding the management of waste materials in Ekiti State University. The population of the study was 750 respondents comprising 600 students and 150 members of staff within Ekiti State University. The entire population was used as sample because it was manageable. The instrument used for collecting data for the study was Management of Waste Materials Questionnaire (MWMQ). It was divided into four sections; A, B, C, D, Section A was sought to collect information on the

demographic data of the respondents. Sections B to D consisted of items to measure nature of the waste materials, management of waste materials, extent waste materials generated is appropriately disposed. The items were rated on a four point, likert type scale of; Strongly Agree (SA)=4, Agree (A=3), Disagree (D)=2 and Strongly Disagree (SD)=1. The instrument used for the study was subjected to scrutiny by experts in Health Education and in the area of Tests and Measurement for face and content validity. The experts determined the level of appropriateness of the instrument in measuring what they are supposed to measure. The experts also reviewed the items in terms of clarity of expression, and checked the extent to which the items on the instrument represented the original test blueprint. Their recommendations were appropriately adopted into the final form of the instrument. The reliability of the instrument was determined using cronbach's Alpha. Each of the

instrument was administered on 30 students and 10 staff randomly selected from a university that was not used in the study.

The administration of the instrument for this study was in two stages. At the first stage, the researcher was personally presented a formal letter of introduction to the school management. Copies of the questionnaire were administered and collected through direct delivery and recovery method to ensure high return rate. Out of the 750 copies of questionnaire administered, 709 copies were retrieved and yielded 94.5 %. The data collected through the instrument were analysed using descriptive statistics. The research questions were answered using mean and standard deviation.

Results

Research Question 1: What is the nature of the waste materials within the university community?

Table 1: Nature of the Waste Materials within the University Community?

S/N	Factors	SA	A	D	SD	Mean	Remarks
1.	Littering of classrooms with sachet water bags, biscuit, groundnut and orange peels	13	425	271	-	2.64	Agreed
2.	Indiscriminate littering of the environment with polythene bags	11	652	45	1	2.95	Agreed
3.	Littering of the school learning environment with wrappers from junk foods	11	642	35	21	2.91	Agreed
4.	Indiscriminate disposal of empty can drinks such as water and mineral	3	388	315	3	2.55	Agreed
5.	Dropping of waste papers in class rooms and school premises indiscriminately	11	695	1	2	3.01	Agreed
6.	Disposal of sanitary towels in school environment indiscriminately	10	429	270	-	2.63	Agreed
7.	Throwing away of corn cubs in unauthorized places within the school environment	118	357	210	24	2.80	Agreed
8.	Urinating indiscriminately in any space within the learning environment	1117	361	207	24	2.81	Agreed
9.	Unwillingness to flush school conveniences after usage	193	471	22	23	3.18	Agreed
10.	Indiscriminate spilling of water and urination on the floor of toilets	178	458	32	41	3.09	Agreed

Table 1 indicates the nature of the waste materials within the university community. Based on the mean cut-off mark of 2.50, all the 10 items were agreed by most of the respondents. The nature of the waste materials include littering of classrooms with sachet water bags, biscuit, groundnut and orange peels, indiscriminate littering of the environment with polythene bags, littering of the school learning environment with wrappers from junk foods, indiscriminate disposal of empty can drinks e.g. water and minerals, dropping of waste papers in class rooms and school premises indiscriminately,

disposal of sanitary towels in school environment indiscriminately, throwing away of corn cobs in unauthorized places within the school environment, urinating indiscriminately in any space within the learning environment, unwillingness to flush school conveniences after usage, and indiscriminate spilling of water and urination on the floor of toilets.

Research Question 2: How are the waste materials being managed within the University community?

Table 2: Management of Waste Materials within the University Community

S/N	Factors	SA	A	D	SD	Mean	Remarks
1.	Construction of waste dump site	42	129	369	169	2.06	Disagreed
2.	Recycling method should be adopted	70	220	319	100	2.37	Disagreed
3.	Burning of waste	14	14	426	185	1.90	Disagreed
4.	Enforcement of proper waste management	-	72	352	382	1.70	Disagreed
5.	Usage of garbage collectors	142	298	255	14	2.80	Agreed
6.	Creating awareness on proper waste Management	56	170	399	84	2.28	Disagreed
7.	Careful disposition	28	70	284	327	1.72	Disagreed
8.	Usage of waste bin	121	362	201	25	3.82	Agreed

Table 2 indicates how waste materials are being managed within the university community. Based on the mean cut-off mark of 2.50, the respondents agreed on three items and disagreed on five items out of the eight items presented in table 2. The University manages its waste materials through

usage of garbage collectors and usage of waste bin.

Research Question 3: To what extent are waste materials generated appropriately disposed within the university community?

Table 3: Disposal of Waste Materials within the University Community

S/N	Factors	SA	A	D	SD	Mean	Remarks
1.	Waste materials are appropriately disposed	70	85	427	127	2.31	Disagreed
2.	There is a unit in the university in charge of waste disposal	213	470	10	16	3.24	Agreed
3.	There is an environmental unit that ensure safe environment within the university compound	42	84	370	213	1.94	Disagreed
4.	There is a unit that enforces proper waste disposal within the university community	42	42	426	199	1.90	Disagreed
5.	Offenders are punished appropriately within the university	70	129	496	14	2.36	Disagreed

Table 3 indicates the extent waste materials generated are appropriately disposed within the university community. Based on the mean cut-off mark of 2.50, the respondents disagreed that waste materials are appropriately disposed. The respondents agreed that there is a unit in the university in charge of waste disposal but enforcement was not encouraging.

Discussion of findings

The findings within the university campus and the community revealed that the nature of the waste materials include littering of classrooms with sachet water bags, biscuit, groundnut and orange peels, indiscriminate littering of the environment with polythene bags, littering of the school learning environment with wrappers from junk foods, indiscriminate disposal of empty can drinks such as water and minerals, dropping of waste papers in class rooms and school premises indiscriminately, disposal of sanitary towels in school environment indiscriminately, throwing away of corn cubs in unauthorized places within the school environment, urinating indiscriminately in any space within the learning environment, unwillingness to flush school conveniences after usage, and indiscriminate spilling of water and urination on the floor of toilets. This finding supports the finding of Giusti (2009) who said that waste is produced by human activity, for example the extraction and processing of raw materials. This includes disposal of sanitary towels in school environment and littering of school learning environment with wrappers and can drinks. This finding supports the findings of Jubril et al (2012) on waste generated within a Malaysian University environment. This finding is also in support of Muaaz (2017) who revealed

that people disposed different forms of waste from time to time. This finding might be due to the fact that students only dispose most items anywhere within campus.

Conclusion

Sequel to the findings of this study, it was concluded that the university manages its waste materials through usage of garbage collectors and usage of waste bin. The nature of waste materials such as littering of classrooms with sachet water bags, biscuits, groundnut and orange peels, urinating indiscriminately in any space within the university environment. This could result in different kinds of diseases.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. The nature of waste generated within the University campus is typical and will likely remain the same over time, but the management can curb it with appropriate policy and incentives.
2. The institution should delegate some specific tasks on waste management. This could be achieved with the necessary incentives by the authorities by supplying bin bags; but more importantly, separate (appropriately labeled) bins provided en masse for different waste products.
3. The secondary dump site locations should be covered and transported to the terminal points and arranged more regularly
4. Departments in each of the universities can work on recyclable materials. This can be achieved by making use of alternative garbage.

- Academic community must look into relevant research that will generate money from recycled gar
5. Efforts must be made to work towards a paperless community where technology takes over internal and external correspondence, and the virtual library becomes more prominent.

References

- Ahmed (2015). An overview of the environment population and health effects
- Babayemi, J.O. & Dauda, K.T. (2009). Evaluation of solid waste generation, categories and disposal options in developing countries: A case study of Nigeria. *Journal of Applied Science and Environmental Management*. 13(3), 83-88.
- Bassis, L. (2014). Waste disposal. Retrieved from [www.unich.edu/gs265/society/waste Disposal.htm](http://www.unich.edu/gs265/society/waste%20Disposal.htm).
- Giusti, L. (2009) A review of waste management practices and their impact on human, health 29(8), 2227-2239.doi:10.1016/j.wasman.2009-03-028
- Jubril, D., Ibrahim B, & Jamilu, L. (2012): 3R's critical success factor for integrated solid waste management in higher educational institutions. *OIDA International Journal of Sustainable Development*. 05(10) 109-120.
- Muaaz , T. (2017). Assessment of household solid waste generation in rural areas. *Journal of Scientific and Engineering Research*. 4(11), 27-31
- Odukoya, O.O. (2010).Pollution trend in Ogun River, Abeokuta, Nigeria. *Journal of Science*.334 (2), 183-186
- Sankoh, F. Yam, X &Tran, Q. (2023).Environmental and health impact of solid waste disposal in developing cities: A case study of Granville brook dumpsite, Freetown Sierra Leone. *Journal of Environmental Protection*, 4(7), 665-670.doi: 10.4236/jep.2013.47076
- Uchegbu, S. N. (2012). The effects of pollution on urban water supply in Enugu, Nigeria. Retrieved from <https://www.researchgate.net/publication/316597647>.
- Zhuang, K., Kimbal, J., Hogg, E., Zhao, M., Oechel, W., Cassano J. & Running S. (2008). Satellite-based model detection of recent climate-driven changes in northern high-latitude vegetation productivity. *Journal of Geophysical Research-Biogeosciences*, 113, 1-13.