IMPACT OF ENVIRONMENTAL CLUB ON THE KNOWLEDGE AND ATTITUDE OF STUDENTS TOWARDS THE PROPER DISPOSAL OF TOXIC WASTE

BY

AHUEANSEBHOR EJODAMEN DESTINY
EDU1703553

FACULTY OF EDUCATION
UNIVERSITY OF BENIN
BENIN CITY

DECEMBER, 2022

IMPACT OF ENVIRONMENTAL CLUB ON THE KNOWLEDGE AND ATTITUDE OF STUDENTS TOWARDS THE PROPER DISPOSAL OF TOXIC WASTE

BY

AHUEANSEBHOR EJODAMEN DESTINY
EDU1703553

A PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL EDUCATION (HSE), UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE AWARD OF THE BACHELOR OF SCIENCE (ED) DEGREE IN ENVIRONMENTAL EDUCATION.

DECEMBER, 2022

APPROVAL

I hereby certify that this research work was carried out by Ahueansebhor Ejodamen Destiny, adequate in scope and quality in partial fulfillment of the requirements of the Award of The Bachelor of Science (Ed) Degree in Environmental Education in the Faculty of Education, University of Benin City.

_____ _____

Dr Norris Erhabor **Date**

CERTIFICATION

We undersigned, certify that this research work was carried out by Ahueansebhor Ejodamen Destiny in the Department of Health and Environmental Education, Faculty of Education, University of Benin, Benin City in partial fulfillment of the fulfillment of the award of the Bachelor of Science (ed) degree in Environmental Education.

_____ _____

Dr. Norris Erhabor **Date**
Project Supervisor

_____ _____

Dr. E. O. IGUDIA **Date**
Project Co-ordinator

_____

Prof. O.K. OMOROGIUWA
Dean, Faculty of Education

_____

Date

DEDICATION

This research work is dedicated to God Almighty, always loving Father, my very present help in times of need and my sufficiency. His unending grace has seen me through my academic pursuit in University of Benin. And also, to my parents Mr & Mrs Ahueansebhor.

ACKNOWLEDGEMENTS

I am immensely indebted to God Almighty, who made it possible for me to initiate and accomplish this research work.

I articulate my sincere gratitude with special thanks to my supervisor Dr. Norris Erhabor who happens to be an icon, mentor, motivator, friend, and corrector for the fatherly roles he played throughout the course of this research work. His input at the planning and execution stages gave direction to the work, his academic, moral, and leadership qualities were propelling forces and so were his constructive criticisms

I am indebted to the two most important people in my life Mr & Mrs. Ahueansebhor for being my backbone and believing so much in me; for their love, moral and financial support towards my education, my uncles, Mr. Nosa Igbinomwanhia and Mr. Ambrose Efe Ojaebu I really appreciate you deeply for all the financial supports. To my wonderful sibling, Desmond and Anointed thank you for all you do.

Special thanks to Raphael Chinwendu for the support, love and care throughout the course of this project.

My sincere gratitude goes to all my classmates, my friends, Dede, treasure, glory, Adebayo, abundance, and believe. Thank you all for coming through for me, you all hold a special place in my heart, I love you all deeply.

TABLE OF CONTENTS

Abstract

This study was carried out to identify the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste. Four research questions and two hypotheses were raised and analyzed for the purpose of the study.

A random sampling technique was used in selection of forty (40) students which would be drawn from all SS2 and SS3 students in Bravura Crestview Benin City were randomly selected for the study. The data were collected with questionnaire instrument and analyzed using simple percentage. The result revealed that; the knowledge level of SS2 and SS3 students in Bravura Crestview towards toxic waste is relatively high, students in Bravura Crestview are aware of effective mechanisms for toxic waste management, they know about the complications of improper waste management and they worry about toxic waste around their school and home environments, finally, the study revealed that the students had a positive attitude towards toxic waste, as it was obvious that they know that improper toxic waste disposal is a threat to the environment, and they also have a role to minimize the toxic waste.

Based on the results, it was recommended that environmental education should be taught as a subject of its own from the UBE level and not infused into other subjects with a view to emphasize its relevance and significance in our contemporary society, educational campaign on toxic waste management is highly recommended. This awareness campaign should be targeted at all actors/ stakeholders by teaching them the mechanisms of toxic waste at the source, introducing alternative proper toxic waste management and also the negative effects of improper toxic waste management, efforts should be intensified to establish environmental protection/ conservation clubs in all schools including public and private, and environmental education should be introduced in teacher training institution (at both NCE and degree levels) to produce qualified personnel to teach environmental education in our schools.

CHAPTER ONE

INTRODUCTION

Background of the Study

Environmental Education encompasses the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his bio physical surrounding (United Nations Environmental Programme UNEP, 2012). It is in this light that students understanding and level of awareness on various environmental concepts and problems is important.

Environmental awareness is defined as the sum total of responses that people make to various thematic aspects of the construct environmental education. In simple terms it means knowledge and understanding of facts and concepts related to environment and consequences of various environmental problems like pollution, population explosion, deforestation, ecological.

Progress towards sustainable environment is dependent upon a fundamental change in youths' attitude to nature and the environment

(Sukhwinder, 2013). The role of education institutions in relation to environmental sustainability is more prevalent as it is essential to impart and reinforce the environment respecting moral values in the young minds (Brynjegard, 2011). Over the past 15 years , educational institutions across the world have been encouraged to organize students and to participate more actively in local, national and global processes towards environmental sustainability issues (United Nations Education Scientific and Cultural Organization UNESCO, 2012). Learning more about the environment generally means learning more about what we have done to the environment rather than what we have done to care for it. To become involved in respecting nature and protecting the environment over the long term, people need to have a sense of hope and gratification from environmental guidelines (Stewart, 2001). However, instead of focusing on environmental protection, educational institutions across the world were compelled to work towards the revision of teaching contents, so as to allow education systems to better respond to socio-economic challenges at the local, regional and global level (Walter, 2015).

Toxic wastes can be classified according to their sources and they come in different forms. They can be organic (e.g. unfinished food) or non-organic (e.g. empty food cans), solid or liquid such as bottles and sewage effluents respectively. They can also be in form of gases such as carbon monoxide from generating sets. (UNESCO, 2012). It has been noted however that it is not every kind of waste that is dangerous. What constitutes waste to one man may in fact be raw materials to another. It is a common sight nowadays in our cities to see refuse dumps being hunted by stick wielding youths in filthy rags scavenging for materials (originally disposed of as useless items by their owners), which are then recycled by different industries to produce useful objects of various kinds.

Nevertheless, in as much as wastes may have their uses, it is a different situation altogether when such wastes are classified as dangerous, and in this particular context as toxic (UNESCO, 2012). Toxic wastes are hazardous because of their physical or chemical quality; it is even more so when they are in large quantities. Such wastes cause grave illnesses and contribute significantly to the destruction of life forms of all kinds.

Following this unfavorable effects resulting from environmental degradation, it has become more important to find a preventive way slow down the effects and eventually sustainably mitigating long-term environmental damage. One of the best ways of preservation is by creating environmental awareness among society especially students as they are future leaders, future custodians, planners, policy makers, and educators of the environment and its issues (Jackson, 2005).

The issue of toxic substance/waste treatment is complex. This is because the selection of treatment/disposal technologies requires a great deal of substance characterization to determine the waste properties and depends on the availability, affordability and need for environmentally friendly technologies. Although, there are rules and guidelines governing disposal of toxic substances and wastes, these wastes still find their way to public landfills, nearby dumpsites, drainage channels or water ways, raising serious environmental concerns. In order to curtail these concerns, toxic substances/wastes are first treated so as to reduce their toxic and hazardous nature prior to their ultimate or final disposal. Treatment technologies refer to those techniques which decompose or break down the hazardous

substances and their associated waste into non-hazardous constituents. Many waste treatment technologies can provide permanent, immediate, and very high degrees of hazard reduction.

The treatment technologies are divided into four main methods: Biological methods: Composting, aerobic and anaerobic decomposition, activated sludge, enzyme treatment, etc. Physical methods: Drying, screening, grinding, evaporation, sedimentation, filtration, fixation, etc. Chemical Methods: Oxidation, reduction, neutralisation, hydrolysis, etc. and Thermal Methods: Incineration, boiling, autoclaving, ultraviolet treatment, microwave treatment etc.

Awareness of environmental issues has grown tremendously over the last decade as modern science and a more globally conscious population continues to enlighten to the connection between a healthy planet and livelihoods of people everywhere. For decades, that connection has arguably been undermined by population growth, urbanization and land area loss, creating a potential divide between people and the natural environment. Through contact with and learning about natural areas we can begin to mend this disconnection and restore our balance with nature. Environmental club

has the potential to facilitate awareness that leads to this connection. Exposure to nature, either through structured Environmental club programs or unstructured play, has many benefits (Woodgate, 2012).

Statement of the Problem

In recent times great efforts have been made in protecting environment and natural resources, the fast growing population and unmanaged use these resources will continue to pose significant challenges of protection. environmental problems like; depletion of natural resources, soil loss, diminishing of water quality, climate change, biodiversity loss, air pollution etc. are becoming more serious throughout the world and receiving relatively a higher priority. These environmental hazards are affects and will affect students who have to live close to them for an extended period. This implies, the new generation is the one who be more affected by environmental problems and who can do something towards the solution. The educational institutions, where young generations are concentrated, have the big responsibility and opportunity to create awareness on young students through both formal and informal educations. Institutions like environmental clubs should be more recognized and respond effectively to

environmental deterioration problems through creating environmental awareness to the new leaders of environmental field over the coming new century.

The school environmental club are perceive as ways through which students can meet together and deal on environmental protection issues. With the enormous benefit that comes with environmental club, it has been observed that most schools in Edo state do not have these environmental clubs included in their extra-curricular activities and even in their curriculum. Thus, the study seeks to investigate the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste.

Research Questions.

The following research questions have been formulated to guide the study.

1. What are the knowledge of secondary schools students in bravura crestview academy to toxic waste?
2. What are the attitudes of secondary schools students in bravura crestview academy to toxic waste?

3. Is there any difference between the experimental and control group in their knowledge towards toxic waste disposal?
4. Is there differences between the experimental and control group in their attitude towards proper waste disposal?

Hypotheses

The following null hypotheses will be test at 0.5 level of significance

1. There is no significant difference between the experimental and control group in their knowledge towards toxic waste disposal.
2. Is there difference between the experimental and control group in their attitude towards toxic waste disposal

Purpose of Study

The purpose of this study is to carry out the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste. Specifically, the study intends to:

1. Examine the awareness of secondary schools students in bravura crestview academy to toxic waste

2. Examine the attitudes of secondary schools students in bravura crestview academy to toxic waste.
3. Access the impact of environmental club on the knowledge and awareness of students towards proper disposal of toxic waste

Significance of the Study

The finding of the study will be significant to the students, teachers, implementers of environmental protection and conservation projects and curriculum planners. The students would be afforded the opportunity to benefit from the study as it will give them the chance to appraise themselves particularly on their level of awareness, perception and attitude towards toxic waste and environmental problems. This will be possible since the students will be actively involved in the study as they respond to the item of the research instruments, they will understand (i.e through interactive questions and answers on the items from both students and researcher respectively). Finally, the study will encourage further researches and knowledge on the subject matter.

Scope and delimitation of the Study

The scope of the study is to carry out an assessment on the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste. The study is therefore delimited to secondary schools students in Bravura Crestview Benin City.

Operational Definition of Terms

Attitude: The settled way students feels about toxic waste

Awareness: The level of knowledge of students about proper disposal of toxic waste

Toxic waste: These are any unwanted materials in all forms, solid or liquid that can cause harm to individuals.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter focuses on the review of related literature. And it will be discussed under the following sub-headings:

- Conceptual framework
- Awareness of Students towards Toxic Waste
- Attitude of Students towards Toxic Waste.
- Impact of Environmental club on the knowledge and awareness of Students towards proper disposal of Toxic Waste.
- Health Hazards associated with Toxic Waste
- Summary of Reviewed Literature

Conceptual framework

Development activities that are currently carried out are one effort to improve the quality of human life. Various developments are prosecuted by managing and utilizing available resources for the purposes and interests of development, one of which is industrial activity.

The rapid development and growth of the industrial world are very beneficial for humans. On the other hand, it can also cause a considerable negative effect for it will produce waste either in solid, liquid, or gas that can decrease environmental quality. Development as an important thing should go in line with environmental development. There are three part of modern development philosophy : economics, social, and environment. Development recently absolutely requires environmentally friendly, such as low carbon, low negative impact, etc.

Toxic Waste is the residual material produced by a business and/or activity either on an industrial scale, household, agency, and others. To keep the stable environmental quality, the wastes must be processed and controlled. One of the ways is by managing and treating waste in accordance with their respective characteristics so the waste that will be discharged to the environment has fulfilled the requirements and correspond with the quality standard in the applicable laws and regulations.

Currently, waste issues have become a serious concern in various regions of Nigeria. This is shown by the increasing number of problems that explain how waste management and processing has not been a serious

concern for most industries in Nigeria. Industrial development is not in line with the handling of waste because the procurement of waste management and processing facilities is still considered expensive and burdensome for some industry players. The variety of this type of waste depends on activity of industry and other waste generators. Started by the use of raw materials, selection of production processes and so forth, all the processes will affect the character of the generated waste. Generally, the type of waste which is generated in the instant noodle industry is the same as other food industries, the difference is only in the characteristics that correspond to the raw materials used. The wastes include liquid waste, solid, and waste gas. To reduce the adverse effects of waste on the environment, it is necessary to manage the waste systematically after being produced.

Problems about waste management can have an impact on environmental pollution and may harm human beings, industry actors and the environment itself. The pollution process of industrial hazardous and toxic materials can occur directly or indirectly. The direct process is when pollutants have direct acute and poisonous effects that interfere with human

health and adversely affect the environment, animals, and plants or disrupt the ecological balance of air, water, and soil.

While the indirect process is when the pollutants have an indirect impact and delayed effect on humans and the environment and will only be felt after a certain period of time. In other hand, mismanagement of waste may cause carbon to blow out to atmosphere and make domino effect to other environmental problems.

Toxic and hazardous waste that previously does not undergo a good management can have a very large and accumulative negative impact and the levels are increasing over time. Toxic and hazardous waste materials that are directly discharged into the environment can harm the environmental stability, human health, and other living things. According to the possibility of upcoming great risk, it is advised to minimize the waste of each industrial activity.

According Sulistyani (2007), the disposal of toxic and hazardous waste materials that contaminate groundwater and its surface will cause possible adverse effects on human health, the source of closed drinking water, community changes and the deaths of aquatic animals. There are

several examples of the impact of illegally discharging waste into the environment such as the Minamata tragedy in Japan in the 1950s that made many people suffer from Congenital disease due to the Methyl-Mercury being wasted arbitrarily. Also the tragedy at Love Canal, the USA in the 1970s where there was a lot of toxic and hazardous waste material stockpiled with poor management (Priono, 2018a).

Because of these reasons, it is mandatory for the producer to manage the waste. As for the management, in article 11 of Regulation of government no. 101 of

2014 it is explained that the activities include the reducing, storing, collecting, transporting, utilizing, processing and/or stockpiling.

Toxic and hazardous waste materials have characteristics that are different from the waste in general, mainly due to its unstable nature. The stability of hazardous and toxic materials is influenced by external factors such as pressure or friction, temperature and/or mixed with other materials, which may trigger reactive, flammable, explosive, or poisonous feature. Toxic and hazardous wastes generated in industrial activities consist of used batteries, lamps, chemical bottles and oil-contaminated fabrics, oil residues,

diesel, chemical waste, chemical liquid residues, tinner and residual combustion processes occurring at coal boilers.

The Awareness of Students towards Toxic Waste

One of the greatest challenges facing developing countries is the unhealthy disposal of toxic waste which resulted from human activities of development and survival (Kofoworola, 2017). It is a problem recognized by all nations at the 1992 Conference on Environment and Development, and regarded as a major barrier in the path towards sustainability (UNCED, 2012). There is strong evidence which suggests that individual or group awareness and attitudes towards waste generation and management is critical in the effort to respond to the waste management challenge. Thus, it comes as no surprise, that there existed an abundant literature on waste management attitudes and behavior and on the limited use of recycling (Kofoworola, 2017).

All over the world, toxic wastes is mostly a product of man and animal activities in his day to day living, often generated from agriculture, industry, household, construction, mining and all forms of resource use. According to the United State Environmental Protection Agency, (2018),

toxic waste is any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities'. Nearly everything we do leaves behind some kind of waste.

As we enjoy all things of nature, so do materials not needed by us come with them. We enjoy food, drink, clothing, but lack the passion and discipline to manage the end products of these resources. We tend to throw them about with little thought of their effects on the environment and overall health of man (Ogboji 2015). The after effects of this I don't care attitude of resource users lead to indiscriminate dumping of wastes on the environment. Once left in the environment uncontrolled, carbon dioxide, carbon monoxide, ammonia, hydrogen sulphide, particulate matter amongst others is generated, and when they are generated, they may enter the environment or emitted into the air or discharged into water including ground water from community activities thereby causing one health hazard and the other. Olokor (2001) noted that the impact of indiscriminate disposal of toxic wastes have been a worrisome health issue for quite some time now. One aspect of the problem

is the fact that the cause-effect relationship takes a long time to establish in some cases while in other cases, the effects are seen immediately. Olokor (2001) further asserted that the environmental risk-factors attached to untreated toxic wastes disposal can cause mild to moderate illness and at times severe illnesses that can lead to death. There could also be outbreak of diseases like cholera, typhoid fever, malaria among others. In severe cases death may occur, especially in children within the ages 0-15 years, whose immunity is not as strong as the adult population (Akindutire & Alebiosu, 2014).

Some risk-factors of indiscriminate toxic waste disposal as articulated by Igboji & Alor (2015) include: blockages in drainages and flooding, environmental hazards/degradation, environmental accidents, epidemic outbreak and unsound environmental Sanitation. Therefore, proper discarding and management of the toxic wastes generated from daily activities is very important in order to minimize the risk to environmental degradation, human and animal health (Magnizvo 2010).

In developing countries, especially Nigeria, improper toxic waste disposal pose a challenge in the urban cities and more semi urban cities.

Ayodele-Oni (2007) described the main problem of toxic waste disposal to rural-urban migration, insufficient coverage or collection system method. Hence the provision of toxic waste related information and awareness, the consequences of these ugly acts and its effects on human and animal health need to be properly addressed.

The students and staff in Nigerian schools need to be provided with adequate information about indiscriminate dumping of toxic waste within the environment and resultant effects to lives. This is because; information has become an essential tool for competitive advantage both at the individual, organisation, societal and national level. Ojedokun (2007) described the concept of information concretely as "all facts, conclusion, ideas, and creative works of the human intellect and imagination that have been communicated formally and informally, in any form."Olaleka, Igbinovia & Solanke (2015), also defined information as data valuable in the planning, decision making, and valuation of any program. He went on to say that it is data that have been subjected to some processing functions capable of answering a user's query, whether recorded, summarized, or simply collected, that assists decision making. The researcher concluded that

information is required in man's daily activities in school, play, or work. More concretely, all the facts, conclusions, ideas, and creative works of the human intellect and imagination which have been communicated, formally or informally, in any form - print and electronic - is what information comprises. Information is the key factor that necessitates information need. The term information needs has also been used in a variety of ways.

According to Emmanuel & Jegede (2016), information need could be referred to as the extent to which information is required to solve problems, as well as the degree of expressed satisfaction or dissatisfaction with the information. According to Olaleka, Igbinovia & Solanke (2015), information need arise whenever individuals find themselves in a situation requiring knowledge to deal with the situation as they deem fit. Wilson (2000) opined that information needs are influenced by a variety of factors such as the range of information sources available, the uses to which the information will be put, the background, motivation, professional orientation and individual characteristics of the user. Also Wilson maintained that Information need of an individual vary as he progresses through life.

Information they say is knowledge and knowledge is power hence one who is not informed is deformed. Adequate information has to be provided to the entire population of students and staff in Nigerian secondary schools. For students and staff of Nigerian secondary schools to thrive in this era, Durujiet al. (2015) stated that they need varieties of information, no matter how versed one is in a field or profession. Information is new knowledge, which leads to a change in actions of people exposed to it. The concept of information needs and level of awareness of schools students has been of great concern to stakeholders especially in developing countries where access to information is seen as a mirage. Researchers have made it known that, the way students organize their learning and search for academic information could be considered very crucial to their overall academic performance. Thus, information needs and seeking behaviour is pertinent for students' academic performance as well as students' and staff wellbeing and health. Health is wealth and good environment begets good health whereas dirty environment begets unhealthy situation thereby leading to different kinds of diseases which could affect staff and student's overall wellbeing. Similarly, Achalu & Achalu (2004), discovered that indiscriminate dumping

of solid and toxic waste hinders free flow of floods when it rains causing blockage of drainages, diversion of flood to various places like living houses, farm lands leading to over-flooding, which results in destruction of lives and properties. Dumping of solid and toxic waste along streams and river causes flooding which can result in natural disasters. It can also result in outbreak of diseases and plagues. Many people have been killed due to flood in the Northern and Easter parts of Nigeria in 2012 and till date, many properties have been lost to flood including farm lands, schools and industries, leading to famine and homelessness. Ajayi (2004) asserted that if an environment is polluted with filthy things like broken bottles, rusted nails, metals, heaps of hazardous things, children and adults could receive injuries from the materials and if not quickly attended to, can lead to tetanus infection, which in turn, can kill the host. Heaps of refuse along motor parks or motor pathways can lead to road traffic accidents which could destroy lives and properties especially, when driving in the night and the driver is not aware of the heaps of refuse ahead.

In most of the developing world toxic waste disposal poses serious threat to environmental sanitation. In the developed world, scientific wastes

disposal, treatment or landfill has replaced rudimentary techniques of open burning or open dumps and the menace is paralysing all the efforts of the third world cities in the management of their large urban environment. Imam, Mohammed & Cheesema (2008) attributed this condition to lack of advanced technology, facility for separation at source, strength of waste management policy and enforcement, environmental education and income status of individuals, amongst other factors. The scholars also stated that massive indifference on the part of the people and their loss of affective and responsible relation to the urban environment seriously affect wastes scenario in Nigeria. Abel (2009), found in his research in Ogbomoso, Oyo State that education, income and social status play significant role in per capita waste generation and dumping. On the other hand, Sridhar et al. (2016) described the quantity and categories of wastes with socio-economic groups; with high and middle groups taking the lion share. Nwachukwu (2016) observed that the volume of toxic waste generated at Onitsha metropolis increased with urbanization and population. While, Igoni (2007) linked the increased waste generation and dumping in most Nigerian cities to rapid increase in population. Adesanya (2017) attributed it to poor evacuation of

central refuse dump in most Nigerian cities. Onibokun & Kumuyi (2011) attributed urban wastes crisis in Nigeria to three fundamental factors namely: rapid increase in urban population; heavy consumption pattern of urban dwellers and inefficiency of the authorities whose statutory responsibilities include efficient waste management in cities. Furthermore, Onibokun & Kumuyi (2011) maintained that urban waste disposal are compounded by density, inadequate infrastructure, inadequate disposal sites, poor dumping culture, inadequate enlightenment and information machinery, mixed nature of wastes and poverty.

The Attitude of Students towards Toxic Waste

The concept of attitude and associated relationship with human behaviour has been a topic of interest among researchers for years. Attitude toward a concept can be defined as an individual or group of individuals, general feeling of favourableness or unfavourableness for that concept (Ajzen & Fishbein, 2000). Many studies of knowledge and attitudes have found a positive and often significant relationship between the two variables. In a study of the effectiveness of a visitor education strategy in raising levels of knowledge and attitudes toward nature conservation, Olson, Bowman and

Roth (2004) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured.

According to Adelakun (2003), promotion of environmental sanitation quality depends on how households and community see themselves in relation to their environment. It is the ways people perceive the environment that they will treat it. And it is the way the environment is treated that it will in turn support life. He believes that illiteracy, ignorance, poverty and greediness are some of the major contribution of environmental degradation because each influence peoples behaviour and attitudes towards the environment. A community that is ignorant of their action on the environment will likely have wrong perception about the effect of that on their health. A community that understands the link between a healthy environment and good health can save money and avoidable agonies. Noibi (2002) states that environmental deterioration had arisen to a large extent because peoples are not aware of the implications of their actions, He further asserts that a person's level of ignorance of the environment can be said to be positively related to the degree of (his/her) damage to the environment. The way a person perceives the environment reflects his or her previous

experience, education, lifestyle and interest. Despite the law level of formal education most especially in the villages, various communities managed the waste generated properly. In the past, people lived in harmony with their environment and they enjoyed good health. There were few medical experts, if any, in many towns and villages. They had dumping sites for refuse far away from the hearts of the village where people live, and they occasionally burnt these sites. Human fasces at the center of the city were regarded as sacrilege. People immediately removed carcasses of animal from the village any time there was one. Trees were planted to provide fresh air and shades for relaxation. Community's sources of water guarded against pollution (Purdom and Anderson, 2000).

A Clean environment influences good health and improves quality of human's life. Awareness and education is very necessary about toxic waste treatment for household people (Jatau, 2013). Proper toxic waste treatment is important for protection of environment. Lack of knowledge, irregular and unplanned dumping of waste are the main reasons of improper waste disposal. Poor knowledge about toxic waste treatment is the major Problem for human health. Waste container and dustbins are very important need for

dispose of waste. Due to lack of knowledge and insufficient availability of good water sewages in homes people are faced many problems (Kiran et al., 2015).

Toxic waste consists of all materials that are produced from humans and animals activities and are discarded and useless. Waste disposal mean removing and destroying or storing damaged used or other unwanted materials include packing waste (glass, paper, or plastic), domestic water, commercial and agricultural. Disposal including dumping, burial landfill sites (Adogu et al., 2015) People must have knowledge about household waste disposal. Awareness among people about dealing with waste is important.

Inadequate and inappropriate knowledge of handling of household waste may have serious health consequences and a significant impact on the environment as well. If people have good knowledge towards household waste disposal they can prevent themselves from infectious diseases and keep their environment is clean (Jatau, 2013). People must have positive attitude towards household waste disposal.

The attitude of students towards toxic waste disposal is affected by their level of knowledge. Most of peoples due to lack of knowledge does not used the dustbins. Open defecation poses the serious threat to the health of peoples (Adeyemo, 2013). People with lack of Knowledge regarding household waste disposal have negative attitude towards waste disposal in their homes. They can achieve many health and environmental benefits if people play an important role in waste disposal. They reduce the harmful effects and prevent from many infectious diseases. Inadequate collection and improper disposal of waste facilitates multiplication of pathogens, causing diseases like cholera and diarrhea and provide breeding sites for disease vectors like mosquito (malaria, dengue fever), flies (Diarrhea) and rodent (Adogu, 2015).

People must have good practices regarding household waste disposal in their homes. Moreover, Poor waste disposal practices lead to contamination of environment there by increasing the burden of infection and diseases among the peoples. Practices can be improved by providing knowledge regarding household waste disposal. Waste disposal Mass media,

television, radio, all can play an important role in improvement of knowledge and practice regarding waste disposal.

Human health and environmental quality are undergoing continuous degradation by the increasing amount of wastes being produced (UNCED, 1992; Osibanjo, 2001). Solid waste is a major public health and environmental concern in urban and coastal areas worldwide; the situations in Africa, part of Asia and Latin America in particular are severe (UNEP, 2005). The total volume of marine litter collected in 2008 beach cleanup worldwide was estimated at 3,402 tons. In Africa, increasing urbanisation, rising standards of living and rapid industrial growth have resulted in increased solid waste generation by households, commercial institutions and industrial activities. Coastal litter, also referred to as marine litter or debris, is any item that appears on beaches, or at sea as a result of anthropogenic activities causing environmental quality deterioration (Storrier & McGlashan, 2006). Littering has been attributed to, inter alia, poor solid waste management practices, lack of infrastructure, indiscriminate human activities and behaviours, and an inadequate understanding on the part of public on the potential consequences of their actions (UNEP, 2009). Marine litter is an

environmental, economic, health and aesthetic problem. It threatens marine and coastal biological diversity in productive coastal areas (UNEP, 2005).

Eneji et al. (2016) conducted a study on waste disposal and waste management. The study hypotheses tested at 0.05 level of significance. The implication of the results is that the residents of Calabar South have very negative attitude towards waste management and disposal, while the second hypothesis tested also showed a significant influence of indiscriminate disposal of waste and the health status of the residents of Calabar South Local Government Area. The study concluded that because of the negative attitude the residents of Calabar South have towards the management and disposal of their waste, it has some significant influence on their health status.

The Impact of Environmental Club on the Knowledge and Awareness of Students towards proper disposal of Toxic Waste

The collective realization of imparting environment related education over the past few years has made it necessary to improve the concept of environment conservation in the world. However, the efforts put in by

individuals and other agencies are limited and infrequent. Recently a new trend has been observed in the development of environmental awareness among children. The underlying concept here is that the most important target group in public education are children and school is the avenue to instil in them good practices (UNEP, 2014). It is believed that children are more proactive and caring; hence, they can make a difference by influencing adults with their thoughts and actions.

Educating students at school level is the most crucial investment in human development. Education related to environment can strongly influence improvement in health, hygiene, demographic profile and productivity; practically all these factors are interlinked with the quality of life. It plays a major role in improving social opportunities for people and enhancing their quality of life by building capabilities, enhancing skill levels and providing more productive employment.

The 21st century is challenged by the problem of environmental degradation and hence is preoccupied by efforts geared towards the protection of the environment. A major target group is young children in schools. Environmental education is germane for the young children of

today in taking wise decisions for their own well-being and for the good of the planet and its inhabitants. It therefore becomes imperative for Environmental education programmes to prepare students with critical thinking skills and intellectual framework to face the most critical environmental issues of the century. The task of keeping the earth's surface safe is clearly a joint responsibility of everybody. Students must be prepared for those responsibilities as well (Scoullous and Malotidi 2004)

The environment is a critical element of the knowledge base we need to live in a safe and prosperous World'. Today's' children will one day have to participate as citizens in making decisions regarding the environment, decisions that will be of lasting importance to themselves , their children and grandchildren, the nation and of course the planet (Massachusetts Secretaries Advisory Group on Environmental Education (nd). Environmental education is a process aimed at developing a citizenry that is aware of and concerned about the total environment and its associated problems and which has the knowledge, attitudes, motivation, commitments and skills to work individually and collectively towards the solution of current problems, as well as the prevention of new ones. (Julie n.d.)

All our material needs and many of our emotional and spiritual ones, are met from our biophysical and social environments. The quality of the environment affects the quality of our lives. Our actions as producers, consumers, voters, and procreators have a cumulative impact on the quality of the environment that sustains us. It is therefore pertinent that nation's educational systems develop and nurture environmentally literate citizens, especially at the primary school level which is the stage man/woman form their characters. Pupils and citizens should be able to apply informed decision making process to maintain a sustainable lifestyle.

Objectives of Environmental -Clubs:

The prime objective of Environmental-Clubs is to design and introduce programmes aiming at educating children about their immediate environment and giving them a clear understanding of the eco-system and their inter-dependence. Following are the objectives of Environmental-Clubs as given by MoEF (Ministry of Environment and Forest):

1. To impart knowledge to school children through hands on experience about their immediate environment, interactions within it, and the problems therein.

2. To develop requisite skills of observation, experimentation, survey, recording, analysis, and reasoning for conserving the environment through various activities.
3. To inculcate the proper attitude towards the environment and its conservation through community interactions.
4. To sensitize children to issues related to environment and development through field visits and demonstrations.
5. To promote logical and independent thinking among children so that they are able to make the right choices in a spirit of scientific inquiry
6. To motivate and stimulate young minds by involving them in action projects related to environmental conservation.

The goal of Environmental club is to develop and environmentally literate citizenry that empowers individuals to deal effectively with positive and negative relationship between people and their environments. It is designed to foster and nurture growth of environmental literacy throughout the human life span (Julie n.d.). Environmental education must be encouraged where at first student become aware of environment. Then, they recognize or review the relationship between humans and nature. The students get knowledge

and skills from the teachers to solve the environmental problems. The teachers motivate to develop the students' attitudes to participate various environmental protection programs in favor of environment). Today's' children will one day have to participate as citizens in making decisions regarding the environment, decisions that will be of lasting importance to themselves, their children and grandchildren, the nation and of course the planet (Massachusetts Secretaries Advisory Group on Environmental Education (nd)).

Environmental education, if given to children at the basic education level, prepares their minds to know the effect of human attitude on the environment and the likely consequences to be suffered by human beings in the long run. It will also be clear to them the dangers that are attached to every misuse and mismanagement of their environmental resources (UNESCO, 2005a and UNESCO, 2005b).

Health Hazards Associated with Toxic Waste.

The toxicity of a substance is its capacity to cause injury once inside the body (Carson and Mumford, 2002). Humans are exposed to hazardous

wastes and substances through inhalation, ingestion and absorption through the skin. Gases, vapours, mists, dusts, fumes and aerosols can be inhaled and they can also affect the skin, eyes and mucous membranes. The skin can be affected directly by contact with the chemicals, even when intact, but its permeability to certain substances also offers a route into the body. Direct ingestion is rare although possible as a result of poor personal hygiene, subconscious hand-to-mouth contact, or accidents. Indirect ingestion through the consumption of plants and animals that have been previously exposed to high concentrations of poisonous metals and chemicals is, however, more prevalent. The consumption of food crops and fish contaminated with heavy metals is a major food chain route for human exposure.

Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues (Lalor, 2008). Chronic level ingestion of toxic metals has undesirable impacts on humans and the associated harmful impacts become perceptible only after several years of exposure (Singh and Kalamdhad, 2011).Cadmium (Cd), for example, is a heavy metal toxicant that affects the liver, placenta, kidneys, lungs, brain and bones. Severe exposure may result in pulmonary odema and death.

Pulmonary effects (emphysema, bronchiolitis and alveolitis) and renal effects may occur following subchronic inhalation exposure to Cadmium and its compounds (Duruibe et al, 2007). Exposure of humans to Copper (Cu) occurs primarily from the consumption of food and drinking water that have been polluted by toxic substances. Excessive human intake of Copper may lead to severe mucosal irritation and corrosion, widespread capillary damage, hepatic and renal damage and central nervous system irritation followed by depression. Severe gastrointestinal irritation and possible necrotic changes in the liver and kidney can also occur (Singh and Kalamdhad, 2011).

As illustrated in the booklet of health effects of chemical exposure by the United States Agency for Toxic Substances and Disease Registry (ATSDR), the following body systems are directly affected by exposure to hazardous substances and harmful chemicals: respiratory, renal, cardiovascular, reproductive, nervous, immune and hepatic systems. The skin is also affected. The functions of these systems and the pathways through which exposures to toxic substances can cause diseases are as follow:

The respiratory system - functions to supply oxygen to the body and remove carbon dioxide. It includes the nasal passages, pharynx, trachea, bronchi, and lungs. Possible health effects of the respiratory system include asbestosis, lung cancer, chronic bronchitis, fibrosis, emphysema, and decreased oxygen supply in blood.

The renal system – Its function is to rid the body of waste, to regulate the amount of body fluids, and to regulate the amount of salts in the body. It includes the kidneys, the urethra, the bladder, and the ureter. Possible health effects of the renal system include decreased formation of urine, decreased blood flow to kidney, decreased ability to filter the blood, prevented urine flow, kidney tissue damage, and kidney cancer.

The cardiovascular system – Its function is to move nutrients, gases, and wastes to and from the body, to help stabilize body temperature, and to fight diseases and infections by transporting white blood cells to important areas. It includes the heart, blood, arteries, veins, and capillaries.

Possible health effects include heart failure and the inability of blood to carry the necessary oxygen to the body.

The reproductive system - functions to produce egg and sperm cells, to nurture a developing foetus, and to produce hormones. For males, it includes the testicles, seminal vesicles, prostate glands, and the penis. For females, it includes the uterus, bladder, vagina, fallopian tubes, ovaries, and the cervix. Possible health effects of the reproductive system include decreased ability to have a baby, increased baby deaths, increased birth defects, and infertility (the inability to have children).

The nervous system – Its function is to transmit messages from one part of the body to another. It includes the central nervous system (the brain and spinal cord) and the peripheral nervous system. Possible health effects of the nervous system include inability to move, loss of feeling, confusion, and decreased speech, sight, memory, muscle strength, or coordination.

The immune system's function is to protect the body from tumor cells, environmental substances, and invading viruses or bacteria. It includes the lymph system, bone marrow, white blood cells, and the spleen. Possible health effects of the immune system include over-reaction to environmental substances (allergy), immune system slow down or failure, and

autoimmunity (autoimmunity causes the body to attack itself – which makes it more likely to have an over-reaction or infection).

The skin – It serves as a barrier to germs and other substances, prevents dehydration, and regulates body temperature. Possible health effects of the skin include irritation, rash, redness or discoloration, dermatitis, and health effect related to other systems and organs due to contamination through the skin.

The hepatic system – Its function is to break down food and store nutrients, to make proteins which are essential for blood to clot, and to purify the body of drugs, contaminants, or chemicals. It includes the liver and its veins. Possible health effects of the hepatic system include liver damage, tumors, accumulation of fat (steatosis), and death of liver cells.

Summary of Reviewed Literature

An attempt has been made by the researcher to review literature pertinent to the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste, a conceptual framework of the study was reviewed extensively reviewed and discussed.

This review revealed that currently, waste issues have become a serious concern in various regions of Nigeria. This is shown by the increasing number of problems that explain how waste management and processing has not been a serious concern for most industries in Nigeria. And information they say is knowledge and knowledge is power hence one who is not informed is deformed. Adequate information has to be provided to the entire population of students and staff in Nigerian secondary schools.

The literature also revealed that Inadequate and inappropriate knowledge of handling of household waste may have serious health consequences and a significant impact on the environment as well. If people have good knowledge towards household waste disposal they can prevent themselves from infectious diseases and keep their environment is clean.

And finally the goal of Environmental club is to develop and environmentally literate citizenry that empowers individuals to deal effectively with positive and negative relationship between people and their environments. It is designed to foster and nurture growth of environmental literacy throughout the human life span. Environmental education must be

encouraged where at first student become aware of environment. Then, they recognize or review the relationship between humans and nature. The students get knowledge and skills from the teachers to solve the environmental problems.

CHAPTER THREE

METHODOLOGY

This chapter describes the research methodology that was used in the study under the following sub-headings:

- Research Design
- Population of the Study
- Sample and Sampling procedure
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of data collection
- Method of Data Analysis

Research Design of the study

Quasi experimental research design is adopted to investigate the Impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste, because it involves a group of people to be

studies by collecting information or data from a few people considered to be the representative of the entire group and making generalization.

Population of the Study

The population of the study comprises of all senior secondary school student in Bravura Crestview Benin City

Sample and Sampling procedure

The sample consists of forty (40) students which would be drawn from all SS2 (20) and SS3 (20) students in Bravura Crestview Benin City through random simple sampling technique.

Research Instrument

The research instrument is a test designed by the researcher. The test items on proper disposal of toxic waste were drawn from lessons that would be taught by the researcher. Both instruments were validated by the researcher's supervisor.

Validity of the Instrument

In order to ascertain the validity of the instrument, he test items on proper disposal of toxic waste was given to the project supervisor. Corrections made on the draft will be incorporated in the final draft.

Reliability of the Instrument

A pretest instrument was conducted using samplesfrom the target population. Thereliability of theinstrument was establish using the test retests method. The test was administered twice to the same samplewith an interval of two weeks between two administrations. A reliability coefficient of 0.846 was obtained by subjecting the data obtained from bothadministration of Pearson's product moment correlation co-efficient.

Method of data collection

The researcher gave the text on proper disposal of toxic waste to group A, who would be taught the text for about 20minutes. And thereafter answered the item test questions on proper disposal of toxic waste.

The group B students were selected students that were not taught about proper disposal of toxic waste. The test answered were collected immediately for analysis.

The environmental club was initiated in Bravura Crestview Academy on the 13th of September, 2021 with the aim of enlightening students on various issues affecting the environment. It was a welcome idea because the students were eager to know about the various topics introduced to them. Before I started teaching them, I first conducted a pretest. To know their knowledge before the club exercise began. Throughout the course of this environmental clubs, pictures and videos were always used as a teaching aid.

The first topic taught In the club was FLOODING, I made the students to know the things they need to understand about flooding and the various dangers that comes with it. I took the students outside their school compound to see the effects of flooding in the environment.

The second meeting, I revised the previous knowledge, give them more information and start noticing attitude change towards the topic.

The last topic that was taught in the environmental club was ‘Toxic Waste’.

Topic: Toxic Waste

Instructional objectives: At the end of the session,the environmental club members should be knowledgeable about the following:

-What toxic waste are

-Classifications/Types of toxic waste

-Treatment of toxic waste

Presentation Summary

Toxic waste may be defined as discarded material that may pose a substantial threat or potential hazard to human health or the environment when improperly handled.

Classifications of toxic wastes

Toxic wastes can be classified according to their sources and they come in different forms. They can be organic (e.g. unfinished food) or non-organic (e.g. empty food cans), solid or liquid such as bottles and sewage effluents respectively. They can also be in form of gases such as carbon monoxide

from generating sets. (UNESCO, 2012). It has been noted however that it is not every kind of waste that is dangerous. What constitutes waste to one man may in fact be raw materials to another. It is a common sight nowadays in our cities to see refuse dumps being hunted by stickwielding youths in filthy rags scavenging for materials (originally disposed of as useless items by their owners), which are then recycled by different industries to produce useful objects of various kinds.

Nevertheless, in as much as wastes may have their uses, it is a different situation altogether when such wastes are classified as dangerous, and in this particular context as toxic (UNESCO, 2012). Toxic wastes are hazardous because of their physical or chemical quality; it is even more so when they are in large quantities. Such wastes cause grave illnesses and contribute significantly to the destruction of life forms of all kinds.

Treatment of toxic waste

The issue of toxic substance/waste treatment is complex. This is because the selection of treatment/disposal technologies requires a great deal of substance characterisation to determine the waste properties and depends on

the availability, affordability and need for environmentally friendly technologies. Although, there are rules and guidelines governing disposal of toxic substances and wastes, these wastes still find their way to public landfills, nearby dumpsites, drainage channels or water ways, raising serious environmental concerns.

In order to curtail these concerns, toxic substances/wastes are first treated so as to reduce their toxic and hazardous nature prior to their ultimate or final disposal. Treatment technologies refer to those techniques which decompose or break down the hazardous substances and their associated waste into non-hazardous constituents. Many waste treatment technologies can provide permanent, immediate, and very high degrees of hazard reduction.

The treatment technologies are divided into four main methods: Biological methods: Composting, aerobic and anaerobic decomposition, activated sludge, enzyme treatment, etc. Physical methods: Drying, screening, grinding, evaporation, sedimentation, filtration, fixation, etc. Chemical Methods: Oxidation, reduction, neutralisation, hydrolysis, etc. and Thermal Methods: Incineration, boiling, autoclaving, ultraviolet treatment, microwave treatment etc.

Evaluation

At the end of the lesson, a questionnaire was administered to two different class(Experimental and control group). The experimental group were taught on the topic so they had knowledge about the questionnaire while the control group wasn't taught. Hence after the exercise, it was seen that they were differences in the responses gotten from the experimental and control group

Method of data analysis

The data collected will be properly organized and tabulated. The responses is statistically analysed by the use of simple percentage.

CHAPTER FOUR

PRESENTATION OF DATA AND DISCUSSION OF FINDINGS

This chapter entails analysis of data interpretation and discussion of result obtained from through the questionnaires from the respondents that constitute the sample of the study.

Demographical Data

Distribution of Respondents by Gender

Gender	Frequency	Percent
Male	19	47.5
Female	21	52.5
Total	**40**	**100**

Source: Researcher's fieldwork, 2022

Distribution of Respondents by Age

Age (yrs.)	Frequency	Percent
11-13	4	10
14-16	29	72.5
17-19	2	5
20 above	1	2.5
Total	**40**	**100**

Source: Researcher's fieldwork, 2022

Distribution of Respondent by Class

Class	Frequency	Percent
SS2	20	50
SS3	20	50
Total	**40**	**100**

Source: Researcher's fieldwork, 2021

SECTION B:

Answering of Research Questions

Research Question 1: What is the knowledge of secondary school students

to toxic waste?

Table 4: Knowledge of secondary school students to toxic waste

S/N	Item	Frequency (N)	Percentage (%)
1	**Toxic waste are ……**		
	harmful to health	40	100%
	not dangerous	Null	0%
2	**The proper disposal of toxic waste is who's duty**		
	waste management authorities	12	30%
	you and I	28	70%
3	**Toxic Wastes are the residual material produced by…….**		
	Humans	13	32.5%
	Animals	Null	0%
	all of the above	27	67.5%
4	**Toxic waste can be in which form**		

	solid and liquid	15	37.5%
	organic and non-organic	Null	0%
	all of the above	25	62.5
5	**Toxic waste can be dangerous because of their physical and ……**		
	traditional quality	Null	0%
	chemical quality	40	100%
6	**When toxic waste are not properly treated or removed it causes……**		
	environmental hazards	17	42.5%
	Sicknesses	23	57.5%
7	**Lack of knowledge, irregular and unplanned dumping of waste are the main reasons of improper waste disposal**		
	True	40	100%
	False	Null	0%

Researcher Fieldwork 2022

Table 4 presented data on Knowledge of secondary school students to toxic waste. Item 1 on the table showed respondent choice on the health effect of toxic waste. It showed that 40(100%) of the respondent affirmed that toxic

waste is harmful to health, 12(30%) revealed that the proper disposal of toxic waste is the duty of waste management authorities while 28(70%) revealed that for everybody. Data on how toxic waste are produced revealed that 13(32.5%) of the respondent affirmed that it is from Humans, while 27(67.5%) revealed that it is from both Humans and Animals. Furthermore, item 4 asked about the forms of toxic waste. 15(37.5%) affirmed that it can be in solid and liquid, while 25(62.5%) of the respondents affirmed that it can be in solid, liquid, organic, and non-organic. 40(100%) of the respondents affirmed that toxic waste can be dangerous because of their physical and chemical qualities. 23(53.5%) of the respondents affirmed that when toxic waste are not properly treated or removed it causes sicknesses while 17(42.5%). Finally, all 40 of the respondents affirmed that lack of knowledge, and irregular and unplanned dumping of waste are the main reasons for improper waste disposal.

The study in table 4, therefore, concludes that SS2 and SS3 students in Bravura Crestview have knowledge toxic waste.

Research Question 2: What are the awareness of secondary school students to toxic waste?

Table 5: the awareness of secondary school students to toxic waste

S/N	ITEM	Aware	Unaware
1.	I worry about toxic waste around my school and home environment	40 **(100%)**	NULL **(%)**
2.	Local authorities have a role to play in the management of toxic waste	40 **(100%)**	NULL **(%)**
3.	I dispose toxic waste at home indiscriminately	10 **(25%)**	30 **(75%)**
4.	I am aware of effective mechanisms for toxic waste management	31 **(77.5%)**	9 **(25.5%)**

5.	I know about the complications of improper waste management	36 **(90%)**	4 **(10%)**

Researcher Fieldwork 2022

The above Table 5 shows the awareness of secondary school students to toxic waste. This view was reflected in the responses of 26(64%) and 14(35%) strongly agreed and agreed respectively that they worry about toxic waste around their school and home environment.

Similarly, 21 respondents representing 52.5% and 19(47.5%) attested that local authorities have a role to play in the management of toxic waste.

The majority of the respondents refuted that they dispose toxic waste at home indiscriminately. This was evidenced by the respondents opinion which showed that 22(55%) strongly disagreed and 8(20%) disagreed respectively while only 6 of the respondent representing (15%) and 4 representing (10%) strongly agree and agree respectively.

On the other hand, 20 respondents representing 50% and 11(27.5%) agreed that they are aware of effective mechanisms for toxic waste management, while 5(12.5%) while strongly disagreed, 4(10%) disagreed.

Finally, 23 respondents representing 57.5% and 13(32.5%) agreed to the statement that they know about the complications of improper waste management, while 4(10%) disagreed.

In the third objective, Based on the result in table 5, the study therefore conclude that students are aware of effective mechanisms for toxic waste management, they know about the complications of improper waste management and they worry about toxic waste around their school and home environments.

Research Question 3: What are the attitudes of secondary school students to toxic waste?

Table 6: The attitudes of secondary school students to toxic waste.

S/N	ITEM	SA	A	SD	D
1.	Improper toxic waste disposal is a threat to the environment.	22 **(55%)**	18 **(45%)**	NULL **(0%)**	NULL **(0%)**
2.	Household toxic waste management is the sole responsibility of my parents.	4 **(10%)**	NULL **(0%)**	26 **(65%)**	10 **(25%)**
3.	Toxic waste disposal is the sole responsibility of the local authorities.	19 **(47.5%)**	15 **(37.5%)**	6 **(12.5%)**	NULL **(0%)**
4.	I am also responsible for the generation of toxic waste.	17 **(42.5%)**	13 **(32.5%)**	6 **(12.5%)**	4 **(10%)**
5.	I also have a role to minimize the	31 **(77.5%**	9 **(22.5%)**	NULL **(0%)**	NULL **(0%)**

	toxic waste.	)			
	TOTAL/%	**93 (47.5%)**	**55 (27.5%)**	**38 (18%)**	**14 (7%)**

Researcher Fieldwork 2022

The above table 6 shows responses to the attitudes of secondary school students to toxic waste. A cursory look as table 3 shows responses of 22(55%) and 18(45%) strongly agree and agree respectively that improper toxic waste disposal is a threat to the environment.

On the other hand, 26 respondents representing 65% and 10(25%) strongly disagreed that household toxic waste management is the sole responsibility of my parents, while 4(10%) strongly agree.

The respondents agreed that toxic waste disposal is the sole responsibility of the local authorities. This was evidenced by the respondents opinion which showed that 19(47.5%) strongly agreed and 15(37.5%) agreed respectively while 6 of the respondent representing (12.5%) strongly disagreed.

Similarly, 17 respondents representing 42.5% and 13(35.5%) strongly agreed and agreed that they are also responsible for the generation of toxic waste, while 6(12.5%) strongly agree, 4(10%) agreed.

Finally, the respondents agreed that they also have a role to minimize the toxic waste, with 31 of the respondents representing (77.5%) strongly agreed, and 9(22.5%) agreed.

In the third objective, the study seeks to find out the attitudes of secondary school students to toxic waste. Table 3 revealed that the students had a positive attitude towards toxic waste, as it was obvious that they know that improper toxic waste disposal is a threat to the environment, and they also have a role to minimize the toxic waste.

Hypothesis one: There is no significant difference in the knowledge of students towards the proper disposal of toxic waste between experimental and control groups

Table 7: independent sample t-test on difference in the knowledge of students towards proper disposal of toxic waste between experimental and control group.

Group	N	Mean	S.D	t	d.f	sig
Experimental	20	5.70	1.12	2.00	38	0.052
Control	20	5.10	0.70			

The table shows the independent sample t-test on the difference in the knowledge of students towards proper disposal of toxic waste between experimental and control group. It can be seen that the t-test value is 2.00, degree of freedom (df) is 38 and the level of significance is 0.052 which is greater than the set alpha level of 0.05. Hence, the null hypothesis which states that there is no significance difference in knowledge of students towards the proper disposal of toxic waste between experimental and control group is accepted. This shows that environmental club did not significantly impact on the knowledge of proper waste management among the students in the study.

Hypothesis two: There is no significant difference in the attitude of students towards the proper disposal of toxic waste between experimental and control groups

Table 8: independent sample t-test on difference in the attitude of students towards proper disposal of toxic waste between experimental and control group.

Group	N	Mean	S.D	t	d.f	sig
Experimental	20	14.70	2.47	3.69	38	0.01
Control	20	12.10	1.94			

The table shows the independent sample t-test on the difference in the attitude of students towards proper disposal of toxic waste between experimental and control group. It can be seen that the t-test value is 3.69, degree of freedom(df) is 38 and the level of significance is 0.01. Hence, the null hypothesis which states that there is no significant difference in the attitude of students towards the proper disposal of toxic waste between experimental and control group is rejected. This shows that environmental

club has a significant impact on the attitude of proper waste management amongst the students in the study.

Discussions of Findings

The result of this study has been quite, informative and revealing. Based on the analysis of data or information collected from the opinion of the respondents on: **the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste**.

The analysis of research question one revels that SS2 and SS3 students in Bravura Crestview have knowledge toxic waste. The attitude of students towards toxic waste disposal is affected by their level of knowledge. Most of peoples due to lack of knowledge does not used the dustbins. Open defecation poses the serious threat to the health of peoples (Adeyemo, 2013). People with lack of Knowledge regarding household waste disposal have negative attitude towards waste disposal in their homes. They can achieve many health and environmental benefits if people play an important role in waste disposal.

The results of research question two shows that students are aware of effective mechanisms for toxic waste management, they know about the complications of improper waste management and they worry about toxic waste around their school and home environments. Information they say is knowledge and knowledge is power hence one who is not informed is deformed. Adequate information has to be provided to the entire population of students and staff in Nigerian secondary schools. For students and staff of Nigerian secondary schools to thrive in this era, Durujiet al. (2015) stated that they need varieties of information, no matter how versed one is in a field or profession. Information is new knowledge, which leads to a change in actions of people exposed to it.

Finally research question three revealed that the students had a positive attitude towards toxic waste, as it was obvious that they know that improper toxic waste disposal is a threat to the environment, and they also have a role to minimize the toxic waste. A Clean environment influences good health and improves quality of human's life. Awareness and education is very necessary about toxic waste treatment for household people (Jatau, 2013). Proper toxic waste treatment is important for protection of

environment. Lack of knowledge, irregular and unplanned dumping of waste are the main reasons of improper waste disposal. Poor knowledge about toxic waste treatment is the major Problem for human health. Waste container and dustbins are very important need for dispose of waste. Due to lack of knowledge and insufficient availability of good water sewages in homes people are faced many problems (Kiran et al., 2015).

IMPACT OF ENVIRONMENTAL CLUB

From the hypothesis carried out, it is seen that there is an impact in the attitude of students towards the proper disposal of toxic waste.

Environmental club encourages students to study the local environment and to contribute to solving environmental problems and environmental club is an ideal place for students to gain these understandings. In so doing, students will be playing an important role in Environmental Education for Sustainable Development through (EFC. 2019) Understanding the consequences of human actions for the earth and its resources and Understanding decisions and actions that can be taken locally and globally to encourage sustainable living and to avoid unsustainable practices, taking personal responsibility for living in a sustainable way.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of the study as well as the conclusion drawn. It also outlined the recommendations proffered in viewed of the findings made with suggestion for further research.

Summary

The purpose of this study is to carry out the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste. Specifically, the study intends to: examine the awareness of secondary schools students in bravura crestview academy to toxic waste; examine the attitudes of secondary schools students in bravura crestview academy to toxic waste, access the impact of environmental club on the knowledge and awareness of students towards proper disposal of toxic waste.

Formatted[DELL]: Space Before: 1.5 pt, Don't adjust space between Asian text and numbers, Don't adjust space between Latin and Asian text, Don't adjust right indent when grid is defined

The study was conducted to find out an assessment on the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste. forty (40) students which would be drawn from all SS2 and SS3 students in Bravura Crestview Benin City were randomly selected for the study.

The summary can be seen as highlighted:

1. The knowledge level of SS2 and SS3 students in Bravura Crestview towards toxic waste is relatively high.
2. Students in Bravura Crestview are aware of effective mechanisms for toxic waste management, they know about the complications of improper waste management and they worry about toxic waste around their school and home environments.
3. Finally, the study revealed that the students had a positive attitude towards toxic waste, as it was obvious that they know that improper toxic waste disposal is a threat to the environment, and they also have a role to minimize the toxic waste.

Conclusion

Environmental education has the potential to make students respond to the environmental challenges with creativity, enthusiasm, sharper critical thinking skills and a positive attitude. The solution is conservation-which can be defined as the wise use of bio-natural resources on a sustained yield basis. The inclusion of topics on the environment in the curricula of both the UBE and Senior Secondary education is with a view to entrenching pro

environment values in the pupils at a tender age, who are also expected to be change-agents in the society. To further strengthen this, was the idea of forming environment or conservation clubs/societies in our schools. However, despite the very obvious 'good' intentions of such clubs they are almost not in existence in Edo state schools, particularly at the UBE and senior secondary levels. This is therefore, one area that needs the commitment of not only the environmental education panel, nor Science Teachers Association of Nigeria (STAN) but all the organizations and individuals alike, to synergize efforts to ensure that these clubs are not just formed in our schools (both public and private) but are also functional.

This study established that the levels of toxic waste knowledge, attitude and practice was good. A lot of attention is still required in the area of environmental sanitation especially in developing countries like Nigeria, with respect to not only employing and promoting strategies that influence behavioral change through effective regular education and awareness campaigns that are targeted, appropriate and consistent; but also, by advocating for increased public-sector investments in basic sanitation infrastructures that is sustainable, well planned and coordinated. This will

form the basis for adopting demand led approaches that will further empower informal sector participant to improve their own sanitation.

Recommendations

In view of the above, the following recommendations are therefore put forward:

1. Environmental education should be taught as a subject of its own from the UBE level and not infused into other subjects with a view to emphasize its relevance and significance in our contemporary society
2. Educational campaign on toxic waste management is highly recommended. This awareness campaign should be targeted at all actors/ stakeholders by teaching them the mechanisms of toxic waste at the source, introducing alternative proper toxic waste management and also the negative effects of improper toxic waste management.
3. Efforts should be intensified to establish environmental protection/ conservation clubs in all schools including public and private.

4. Environmental education should be introduced in teacher training institution (at both NCE and degree levels) to produce qualified personnel to teach environmental education in our schools

Suggestions for Further Study

This study investigated the Impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste, using 40 respondents and a single school. The future researcher may repeat this study by using larger population such as more than one school from different locations.

REFERENCES

Abel, O.A. (2009). An Analysis of Waste Generation in a Traditional African City The Example of Ogbomosho, Nigeria. Environment and Urbanization, SAGE Journals, 19(2): 527.

Achalu O.E and Achalu E.I (2004) Environmental Health and Pollution Control, Lagos: Simarch.

Adelakun, K. 2003. Information and Communication Technology. Implication for Advancing Environmental Education in Nigeria. Environmental Watch. 1(1)

Adeyemo F and Gboyesola G (2013) Knowledge, Attitude and Practices on Waste Management of People Livin in the University Area of Ogbomso, Nigerian. International Journal of Environment Ecology, Family and Urban Studies 3: 51-56.

Adogu P, Uwakwe, K, Egenti N, Okwuoha A and Nkwocha I (2015) Assessment of waste management practices among residents of Owerri Municipal Imo State Nigeria. Journal of Environmental Protection 6(05): 446.

Ajayi F.T. (2004) A Guide to Primary Health Care Practice in Developing Countries, Government Printer; Ekiti-State.

Ajzen, I., & Fishbein, M. (2000). Theprediction of behavior from attitudinal andnormative variables. Journal of ExperimentalSocial Psychology, 6, 466-487

Akindutire, I.O & Alebiosu , E. O. (2014) Environmental Risk-Factors of Indiscriminate Refuse Disposal in Ekiti State, Nigeria Journal of Research & Method in Education, e-ISSN: 2320–7388,p-ISSN: 2320–737X Volume 4, Issue 5 Ver. II (Sep-Oct. 2014), PP 54-59 retrieved from www.iosrjournals.org on 13th Sept. 2018.

Ayodele-Oni S. (2007) Environmental Health Education in Schools and In the Community. Nigerian School Health Journal 19(2) 116-122

Brynjegard, S., 2011. School Gardens: Raising Environmental Awareness in Children.

Duruibe, M., 2007. A Study on constructivistic approach to environmental education among primary pre- service student teachers (Doctoral dissertation).

Duruji, M. M. etal. (2014). Ethnicization of university education and national development: The Nigerian experience. Retrieved from http://theses.covenantuniversity.edu.ng/handle/123456789 on October 22, 2015 /61

Emmanuel, O. S. and Jegede, O. R. (2011) Information Needs and Information Seeking Behaviour and Use of Information Resources by Mba Students at a Nigerian University. An International Multidisciplinary Journal, Ethiopia Vol. 5 (4), 250-264 retrieved from https://www.ajol.info/index.php/afrrev/article/viewFile/69281/57310 on 6th August 2018

Eneji, C.V.O., J.E.O. Eneji, C.A. Egbe, A.O. Ajake, M.A. Mgbekem, D.D. Eni, P.E. Oko and Ojong Okongor-Eno (2016). Urban Infrastructural Development, Environmental Decay and Human Health. Journal of Agriculture, Biotechnology and Ecology, 3(3),114-126, Beijing, China

Igboji, O. L and Alor, P.(2015) Indiscriminate Dumping of Wastes Contributes to air pollution in Abakaliki, Southeast Nigeria, American-Eurasian J. Agric. & Environ. Sci., 15 (11): 2282-2288, 2015 ISSN 1818-6769 , DOI: 10.5829/idosi.aejaes.2015.15.11.12815

Igoni, A.H., M.J. Ayotamumo, S.T. Ogaji and S.D. Proberty; (2007). Municipal Waste in Port Harcourt, Nigeria. Applied Energy, Elsevier, 84(6): 664-670.

Imam, A., B. Mohammed, D.C. and Cheeseman C.R. (2008). Solid Waste Management in Abuja, Nigeria. Waste Management, 28: 460-472.

Jackson, E. L. (2005). Outdoor recreation participation and attitudes to the environment. Leisure Studies,5, 1-2

Jatau AA (2013) Knowledge, attitudes and practices associated with waste management in Jos South Metropolis. Plateau State Mediterranean Journal of Social Sciences 4(5): 119.

Kiran K, Kini S, Santhosh N, Kiran NU (2015) KAP study of solid waste disposal of households in Kuttar & Manjanadi Panchayath covered under gramaskhema programme of KS Hegde Medical Academy. Nitte University Journal of Health Science. 5(3).

Kofoworola O.F., Gheewala S.H. Estimation of construction waste generation and management in Thailand. Waste Manag. 2009;29:731–738. doi: 10.1016/j.wasman.2008.07.004.

Lalor, R.B., 2008. Schooling and environmental education: Contradictions in purpose and practice. Environmental education research, 13(2), pp.139-153.

Magnizvo, V.R. (2010). An Overview in African Cities and Towns. Urbanization and Urban Development in Africa, Journal of Sustainable 12(7): 234-240

Noibi, J. 2002. Environmental Sustainability: A Definition for Environmental Professionals. Journal of Environmental Sustainability: Vol.1(1) pp:1-9

Nwachukwu, M.U. (2016). Solid Waste Generation and Disposal in a Nigerian City. An Empirical Analysis in Onitsha Metropolis. Journal of Environmental Management and Safety (JEMS), 1(1): 180-191.

Ogboji, A. A. (2015). Information Literacy for Tertiary Education Students in Africa. Ibadan, Nigeria: Third World Information Services Limited

Ojedokun, A. A. (2007). Information Literacy for Tertiary Education Students in Africa. Ibadan, Nigeria: Third World Information Services Limited

Olalekan, A. A, Igbinovia M. O. and Solanke O. E.(2015) Assessment of Information Needs and Seeking Behaviour of Undergraduates in University of Ilorin, Ilorin, Nigeria Information and Knowledge Management Vol.5, No.4, 2015 www. Retrieved from https://www.iiste.org/Journals/index.php/IKM/article/download/21648/24269 on 23rd July, 2018

Olokor C.O (2001) Hazardous Wastes: its production, effects, disposal and control in Nigeria Industries; Oyo: JONAPHER-SD 2(2) 258-267

Olson, E. C., Bowman, M., & Roth, R. (2004). Interpretation and non-formal environmental education in natural resources management. Journal of Environmental Education, 15, 6-10.

Onibokun, A.G. and A.J. Kumuyi, (2011). Urban 31. NEST, 1991. Nigeria Threatened Environment: A Poverty in Nigeria: Toward Sustainable Strategies its Alleviation. Center for African Settlement Studies Team), Ibadan, Nigeria (CASSAD Monograph Series, No 15, NISER, Ibadan, pp: 8-10

Osibanjo O (2001). Overview of hazardous waste according to the BASEL Convention. Seminar Dissertation on "Awareness Raising on Hazardous Wastes Management". UNIDO/FAO/SBC/FMENV, Lagos, Nigeria.

Priono, N. J. (2018a). Limbah B3 : Pengelolaan Limbah B3 Sesuai PP 101 tahun 2014. Retrieved from https://sadkes.net/2018/04/01/limbah-b3/

Purdom, O. 2000.Environmental Pollution and Waste Management (ed) Ola Aluko in Introductory Course in Environmental Science. Page 43-59. Ibadan. Odunprints

Scoullous, M. & Malotidi, V (2004) Handbook on Methods Used in Environmental Education for Sustainable Development. Athens Mio-Ecsede.

Singh, C. and Kalamdhad, D., 2011. The failure of environmental education (and how we can fix it). Univ of California Press.

Sridhar, M.K.C., Bammeke, A.O. and M.A. (2016). A Case Study on the Characteristics of Refuse, Pollution: Causes, Effects and Control in Ibadan, Nigeria. Waste Management, 3: 191-201.

Stewart J. Hudson. (2001). Challenges for Environmental Education: Issues and Ideas for the 21st Century. BioScience, 51, 283-288.

Storrier KL, McGlashan DJ (2006). Development and Management of a coastal litter campaign: The voluntary coastal partnership approach. Marine Policy 30:189-196.

Sukhwinder Kaur.,2013. Role of Teachers in Imparting Environmental Education for Sustainable Development. International Educational E-Journal, 2, 10-16.

Sulistyani, D. (2007). Pengelolaan Limbah Bahan Berbahaya Dan Beracun. Buletin LIMBAH, 11.

UNEP, (2012). 21 Issues for the 21st Century: Result of the UNEP Foresight Process on Emerging Environmental Issues. United Nations Environment Programme (UNEP) Nairobi, Kenya

UNEP-Global . Marine Litter: A Global Challenge. UNEP; Athens, Greece: 2018

UNESCO (2005a) Trends in Environmental Education. Paris, UNESCO

UNESCO (2005b) Diagnosing Intolerance amongStudents. Paris, UNESCO

UNESCO.,2012. Shaping the Education of Tomorrow. Report on the UN Decade of Education for Sustainable Development. UNESCO, Paris

United Nations Conference on Environment and Development (UNCED) (2005). United Nations Conference on Environment & Development. Rio de Janerio, Brazil, 3 to 14 June 1992, AGENDA 21.

United Nations Environment Programme (UNEP) (2005). Marine litter: an analytical overview.

United Nations Environment Programme (UNEP). 2014. Labour and the environment: A natural synergy (Nairobi).

Walter L. F. (2015). Education for Sustainable Development in Higher Education: Reviewing Needs. Transformative Approaches to Sustainable Development at Universities. World Sustainability Series.

Wilson, T.D (2000). on 12th May, 2018 Human Information Behaviour . . Informing Science, 3(2) 4955

Woodgate G. (2010). Introduction. In The International Handbook of Environmental Sociology, 2nd edn, Redclift MR, Woodgate GR (eds). Elgar: Cheltenham; 1–8.

APPENDICIES

DEPARTMENT OF HEALTH AND ENVIRONMENTAL EDUCATION

(HSE)

FACULTY OF EDUCATION,

UNIVERSITY OF BENIN, BENIN CITY

STUDENT QUESTIONNAIRE ON THE IMPACT OF ENVIRONMENTAL CLUB ON THE KNOWLEDGE AND ATTITUDE OF STUDENTS TOWARDS THE PROPER DISPOSAL OF TOXIC WASTE.

Dear Respondents,

This questionnaire is designed for academic purposes. It is structured to find out **the impact of environmental club on the knowledge and attitude of students towards the proper disposal of toxic waste.**

Please kindly respond sincerely to the questions by ticking [√] where applicable. Your responses which are needed for research purposes only will be treated with high level of confidentiality. Thank you.

Section A

Instructions: Please tick ( ) where applicable.

1. Name of

   School:_____

2. Gender: Male ( ) Female ( )

3. Age: 11 – 13 ( ) 14 – 16 ( ) 17 – 19 ( ) 20 above ( )

4. Class: SSS2 ( ) SSS3 ( )

Section B

Instructions: please answer all questions: indicate the answers most appropriate to you by ticking (√) in the box provided. Thank you

A. Knowledge of secondary school students to toxic waste

1. Toxic waste are ……(a) harmful to health (b) not dangerous
2. The proper disposal of toxic waste is who's duty (a) waste management authorities (b) you and I
3. Toxic Wastes are the residual material produced by……. (a) Humans (b) animals (c) all of the above.

4. Toxic waste can be in which form (a) solid and liquid (b) organic and non-organic (c) all of the above

5. Toxic waste can be dangerous because of their physical and …… (a) traditional quality (b) chemical quality

6. When toxic waste are not properly treated or removed it causes……(a) environmental hazards (b) sicknesses

7. Lack of knowledge, irregular and unplanned dumping of waste are the main reasons of improper waste disposal (a) true (b) false

Section C

	ITEMS	Agree	Disagree		
	What are the awareness of secondary school students to toxic waste?				
1.	I worry about toxic waste around my school and home environment				
2.	Local authorities have a role to play in the management of toxic waste				
3.	I dispose toxic waste at home indiscriminately				
4.	I am aware of effective mechanisms for toxic waste management				
5.	I know about the complications of improper waste management				
	What are the attitudes of secondary school students to toxic waste?	**Strongly agree**	**Agree**	**Strongly disagree**	**Disagree**
6.	Improper toxic waste disposal is a threat to the environment.				
7.	Household toxic waste management is the sole responsibility of my parents.				
8.	Toxic waste disposal is the sole responsibility of the local authorities.				
9.	I am also responsible for the generation of toxic waste.				
10.	I also have a role to minimize the toxic waste.				

Reliability
Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.846	20

T-Test

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
know	experiment	20	5.7000	1.12858	.25236
	Control	20	5.1000	.71818	.16059

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
know	Equal variances assumed	8.380	.006	2.006	38	.052	.60000	.29912	-.00554	1.20554
	Equal variances not assumed			2.006	32.220	.053	.60000	.29912	-.00913	1.20913

T-Test

Group Statistics

	group	N	Mean	Std. Deviation	Std. Error Mean
attitude	experiment	20	14.7000	2.47301	.55298
	control	20	12.1000	1.94395	.43468

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
attitude	Equal variances assumed	.785	.381	3.696	38	.001	2.60000	.70338	1.17609	4.02391
	Equal variances not assumed			3.696	35.992	.001	2.60000	.70338	1.17348	4.02652