

ENVIRONMENTAL POLLUTION AND SUSTAINABLE SCHOOL ADMINISTRATION: CAUSES, EFFECTS AND WAY FORWARD

Victor Olugbenga Ayoko

Department of Educational Foundations, Faculty of Education,
National Open University of Nigeria

ABSTRACT

The impact of environmental pollution (EP) in schools are not only on the well-being of the students and teachers alone but can spread to different aspects of education, mental health and general community health. The impact of EP on the students can cause both mental and emotional health that affects students' academic performances and teachers' job motivations in negative ways because of the reactions of students to the allergic actions caused by environmental pollutants. A very conducive environment is important to a positive learning outcome and occupational safety of the teachers and students on the school premises. It is therefore important to assess the impact of environmental pollution on the sustainable administration of schools because of negative effects and to encourage students to think and act appropriately on environmental issues. Qualitative multiple case studies and a review of relevant literature in the interpretive research paradigm were adopted in this research. Secondary data from prints and online media were sourced and arranged into themes for content analysis by looking at issues historically and holistically and research questions formulated on each theme to address specific issues on the causes and effects of environmental pollution on the sustainable administration of schools by answering the formulated research questions. It was suggested that special budgetary allocation should be provided for the provision of facilities such as ventilated classrooms and offices and the student-teacher ratio

should be adhered to prevent overcrowding in the classrooms and regular public health awareness among stakeholders.

Keywords: Administration, Education, Environment, Sustainability, Pollution.

Corresponding author: Victor Olugbenga Ayoko can be contacted at victorayoko@gmail.com

1. INTRODUCTION

The quest for development through man's activities such as mining, industrialization, exploration and urbanization in the global north and global south has resulted in the burden of environmental pollution. Environmental pollution (EP) and climate change are not new phenomena, yet they remain a global threat to human flourishing. Environmental pollution is the main cause of morbidity and mortality. The importance of the studies and awareness of environmental pollution is because of the great effects on human well-being and the surroundings.

To solve the contaminations caused by environmental pollution, Environmental awareness through environmental (ecological education) education is a must. One of the ways to cultivate these values in people is through environmental education. Ecological education is a key factor in improving the state of the environment, and it is important to be taught from an early age. Teachers are an important point in keeping the students abreast of the expected attitudes on environmental health issues and their associated problems through ecological education.

According to Karpudewan et al. (2012) and Buckler & Creech (2014), EP should be integrated into environmental education

(EE) as recommended by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Kostecka (2009) also observed that for decades, many countries in the global north have inculcated EE as a part of their education system. Činčera et al. (2012) noted that for thirty years, EE has been integrated as a cross-cutting theme in countries like Slovakia and the Czech Republic

EE is often underestimated especially in the global south notwithstanding the importance of EP prevention and control in our lives and environment. Bodzin, Klein, & Weaver (2010) also suggested that EE should be emphasized in the primary and secondary school curriculum in addition to other awareness activities through workshops, seminars and conferences because of its importance to healthy living. The school administrator is a factor that can influence the environmental awareness of their teaching and non-teaching staff and the students by putting all elements of EE in place in the school system. As observed by Pellegrini, Campanella, Lorenzini & Nali (2014), the awareness of the impacts and associated risks of EP is an important process in the prevention and control of environmental pollution.

This study examines the impacts of environmental pollution on the sustainable administration of schools, the cause and effects on the teaching-learning process and suggests ways of combating pollution in the school environment for a sustainable environment and the health of the inhabitants. A conducive environment is important to a positive learning outcome and occupational safety of the teachers and students on the school premises. It is therefore important to assess the impact of environmental pollution on the sustainable administration of

schools because of physical and mental health effects and to encourage students to think and act appropriately on environmental issues. Based on this, the purpose of this study is specifically;

1. To identify the impact of environmental pollution on the sustainable administration of schools
2. To find out the causes of environmental pollution in the school environment
3. To ascertain the effects of environmental pollution on the teaching and learning process
4. To find out the Causes and Effects of Climate Change on the Sustainable Administration of Schools.

Based on the above Research Objectives, the following Research Questions are put forward:

1. What are the impacts of environmental pollution on the sustainable Administration of Schools?
2. What are the causes of environmental pollution in the school environment?
3. What are the effects of environmental pollution on the teaching and learning process?
4. What are the Causes and Effects of Climate Change on Sustainable Administration of Schools?

2. REVIEW OF LITERATURE

2.1 Concept of Environmental Pollution

According to online etymology dictionary, the word environment was derived from the French word 'environner'. This means to encircle or to surround. An environment is every natural or man-made thing that surrounds or affects humans, animals or plants. There are two types of Environmental pollution (a). Natural Pollution: pollution of the environment by naturally occurring phenomena, such as cyclones, volcanic eruptions, floods, earthquakes, drought etc. (b). Man-made Pollution: pollution of the environment caused by the aftermath of Human activities such as mining, urbanization, afforestation, industrialization, agricultural activities etc. The interactions of environmental pollutants can result in primary or secondary damage. Primary damage is any damage that the impacts can be monitored or quantified. The secondary damage can only be noticed over a prolonged period because of the level of disturbance displacement (Gheorghe & Ion, 2011).

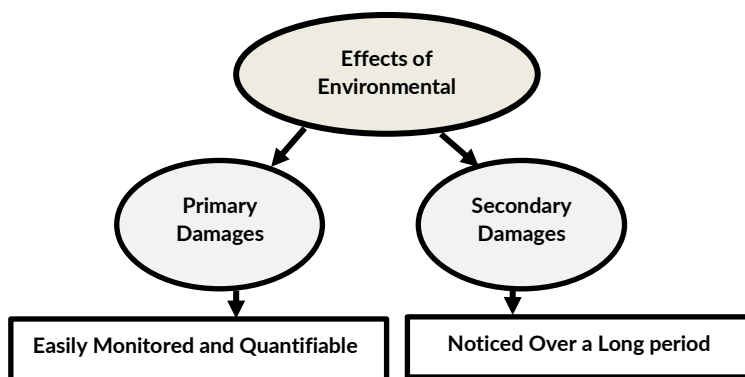


Figure 1. Effects of Environmental Pollution

Source: Ayoko et al. (2024)

Pollution in the school environment distracts the students from concentrating on their studies. It affects their well-being and may lead to diseased conditions or death. In most cases, pollution in the school environment has led to absenteeism or a push-out factor of school dropout.

Teaching is an occupation with high levels of occupational hazards such as mental health, stress, infection transmission and risk of physical injury especially in a pollution-prone school environment. Teachers spend most of their time with their students, parents and colleagues. This regular contact makes them susceptible to infections.

2.2 Forms of Environmental Pollution

i. Noise Pollution

The sustained occurrence of loud or disturbing noise in the environment is referred to as noise pollution. Noise pollution is the unpleasant sound that causes distractions and discomfort from any source within the environment

The harmful effects of noise pollution in the school environment are that it causes auditory disorder (loss of hearing) due to regular exposure to loud and irritating sounds and inability to concentrate on the teaching-learning activities in the classroom

ii. Radioactive Pollution

Radioactive pollution is simply defined as the contamination of the environment with radioactive materials that are very harmful to the lives of humans, animals and plants due to the release of ionizing radiation into the environment. Radioactive

pollution may occur during accidents at nuclear power plants, improper disposal of nuclear waste, nuclear explosions and testing of nuclear materials and mining of radioactive minerals. However, in the school science laboratory, radioactive materials can be used to perform some experiments. In some cases, in the earth science, physics and Chemistry laboratory, the Geiger counter can be used with some radioactive source to teach students practically about shielding

It is the function of the school administrators and the science teachers to make sure that the students and people in the school environment are protected from such radioactive substances in the laboratory or classrooms through proper storage and labelling (EPA, 2022)

iii. Air Pollution

In simple terms, the release of harmful substances into the atmosphere such that the natural composition is negatively affected is what is referred to as air pollution. Causes of air pollution include; smoke from bush burning, incinerators, burning of refuse around the school, and smoke from generating plants used by residential buildings within the neighborhood where the school is located. Exhaust from trucks, buses, motor vehicles and trains. Industrial emissions in the form of fumes, pungent odour from chemicals, bad odour from overcrowded classrooms and damaged septic tanks from neighbouring areas. Particulate matter and some other harmful gases such as carbon compounds (Gana & Toba, 2015).

The air quality is also polluted by the series of chemical reactions that occur in the troposphere due to direct ultraviolet

radiation due to the breakage of the protective ozone layer. Products formed due to these reactions are known to have adverse effects on human health, plants and outdoor materials. The results of these chemical reactions are known to be hazardous to humans, plants and biodegradable materials of commercial values (Ayoko & Ayoko, 2024).

Air pollution can have a devastating effect on human health ranging from primary damage to secondary damage such as; respiratory tract infection, skin irritation, eye and throat infection and suffocation among others. There are some instances of student collapse (students with ailments) in an overcrowded classroom due to inadequate/proper ventilation.

iv. Land Pollution

The deposition of waste materials in the form of biodegradables and non-biodegradables on the soil and surroundings is referred to as land pollution. These wastes can be present in the form of glass, metals, synthetic pesticides, fertilizer, domestic waste in the form of dried refuse, sewage, paper, rubber, and cans among others (Gao, Hu, Li, Zhou, & Zhu 2022).

The major source of concern here is the non-biodegradable waste. That is, waste that cannot be decomposed such as broken bottles, glass, cans, old abandoned vehicles and discarded metallic products. The effect of land pollution can be detrimental to human health. The dump sites can provide a breeding ground for some disease vectors such as rats, flies, and mosquitoes; these can lead to outbreaks of epidemics. For example, an outbreak of lassa fever and some form of waterborne diseases. Glass and metal objects can lead to

serious body injuries when stepped upon. Gullies caused by erosion can lead to accidental falls; excessive erosion over time may negatively affect the school buildings which can pose a risk factor to students. Erosion can also lead to the collapse of roads, culverts and drainage systems all of which can lead to students sustaining various degrees of injuries (Abdul, 2020).

v. Thermal Pollution

When heat is rapidly discharged into a water source, it generates a high temperature which directly and indirectly affects the environment. The effects of the rise in temperature in schools situated in the riverine areas result in stress, loss of concentration and headaches from the parts of the students and the teachers because of the dehydration and accompanying heat. Thermal pollution also causes a drop in oxygen levels. According to Jane (2021), warmer water may produce a ripple effect in the ecosystem because of the effects on aquatic farming which is a source of seafood for the inhabitants of the environment. Administration of schools may be hampered by thermal pollution because it increases the vulnerability of the students to some diseases such as meningitis and skin rashes which may result in the contamination of the entire school environment due to the infectious nature. Thermal environment pollution can cause an imbalance in the behaviour of students in the classroom to become more aggressive, and

quiet, take off clotting or lose concentration due to the inconveniences caused by the dehydration.

vi. Visual Pollution

Visual pollution is anything that impairs a clear view of the natural environment to appreciate the aesthetic value or looks. Visual pollution is a distraction to visual on the visual areas of people by creating ugly changes in the natural environment which may be harmful. The effects of regular exposure to visual pollution include loss of identity, eye fatigue, distraction and a decrease in opinion diversity.

Sources of common visual pollution include debris, Billboards, electric wires, cabbages, antennas, obstructing buildings, automobiles and overcrowding in an area. Visual pollution in the environment makes people feel uncomfortable and insecure.

A study carried out by Bowers & Burkett (1988) to compare two school buildings of different ages found the new building impacted the students to score significantly higher in listening, reading, arithmetic, and language assignments in comparison to students in the older school building.

Aries, Veitch, & Newsham (2010) further opined that workers who sit close to the window experience uncomfortable lighting conditions while view quality can reduce the associated psychological and physical discomforts in office workers like teachers

vii. Water Pollution

Water is an essential commodity for the survival of all living things. Without any doubt, water is life. With the increased

global population, the availability of quality water is facing severe challenges. Xu et al. (2022a) noted that the environment has been polluted and degraded due to urbanization, industrialization, climate change and agricultural production which are having adverse effects on the water bodies necessary for survival of lives, human wellbeing and sustainable social development.

Water pollution has been reported in several studies as the major cause of diarrhoea, enteric fever, morbidity and mortality (Nauges & Strand 2013; Wolf *et al.* 2014), while clean water supplies and sanitation in the school environment improve school attendance (Dreibelbis *et al.* 2013). A study by Ahmad & Join (2019) on the effects of water and health on primary school enrolment and absenteeism in Indonesia found out that the accessibility of clean water in the school environment can improve academic outcome, negatively significant to school absenteeism and positively significant to school enrolment. The

result indicated the importance of portable to students; well-being and schooling activities.

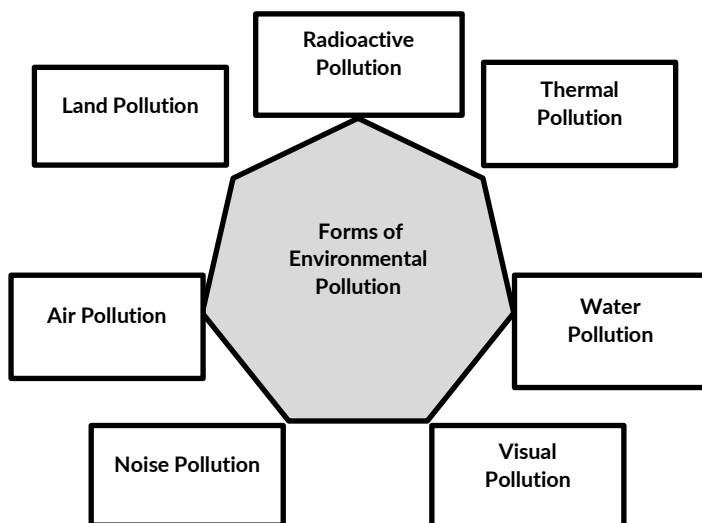


Figure 2. Forms of Environmental Pollution

Source: Ayoko et al (2024)

2.3 Theoretical Support

This study is supported by the Theory of Sustainability. Thorstein Veblen (1917) and Pigou (1929) were the ones behind what we call sustainable development today (Du Pisani, 2006). Generally, sustainability is a form of intergenerational practice that encourages economic and environmental actions to be taken in the present for the benefit of the future for the attainment of the same and better outcomes in terms of welfare, well-being, wealth and so on.

The term “sustainable development administration” is described as an aspect of public policy that deals with the application of the sustainable development paradigm to public administration structures, processes, and institutions like the school system.

Sustainable management is the practices of sustainability in agriculture, businesses, society, education, environment and personal life by managing them for the benefit of the current and future generations. The school administrator in conjunction with all education stakeholders must protect the well-being of the students and teachers presently and make decisions that will control, prevent or eradicate environmental pollution within the school system in the future.

3. RESEARCH METHODOLOGY

Bearing in mind that to evaluate a subjective phenomenon, the choice of a philosophical perspective should be guided by the purposes and requirements of the research study, instead of focusing on the needs and requirements of a research investigation. According to Kuhn (1970), the term qualitative research and interpretive research is often used synonymously, but the two concepts are different. Interpretive research paradigm is a set of general agreement or beliefs among researchers on how problems should be understood and addressed (Kuhn, 1970).

This study is therefore a qualitative multiple case study involving review of relevant literature and content analysis in the interpretive research paradigm were adopted in this study. Secondary data from prints and online media were sourced and arranged into themes for content analysis by looking at issues historically and holistically and research questions formulated

on each theme to address specific complex issues as embedded in the phenomenon under study (Creswell, 2007) so that the causes and effects of environmental pollution on sustainable administration of schools and the way forward can be understood.

4. RESULTS AND DISCUSSIONS

R.Q1: What are the Impacts of Environmental Pollution on the Sustainable Administration of Schools?

The impact of EP on the school administration can be viewed from the angle of the administration process and from the angle of the school administrator who is also human and can be stressed with pollutants such as noise and air and even get infected from contact with the students and the teachers in the process of discharging his duties.

The impacts of environmental pollution in schools are not only on the well-being of the students and teachers alone but can spread to different aspects of education, mental health and general community health. The impact of EP on the students can cause both mental and emotional health that affect students' academic performances and teachers' job motivations in negative ways because of the reactions of students to the allergic actions caused by environmental pollutants, it becomes impossible for students to concentrate on their studies and some eventually starts missing classes because of associated illness and eventually drop out of school or even loss their lives. School environmental pollution if not addressed in time can results into more serious problems such as closure of the school or increasingly attrition rate. The impact of EP on the school

teachers may demotivate the teachers from carrying out their duties as expected because of the discomforts. Infections and stress are caused by these pollutants. Parents may also feel discouraged from sending their children to such school that is prone to any form of environmental pollution.

The effects of environmental pollution may make it difficult for the school administrator to maintain a sustainable administration because of the behaviour of the students and staff to the discomfort caused by the pollutants.

Administration of schools involves the management of all internal and external operations of the school system from supervision of instructions, and school budgeting to maintaining a safe learning environment (Akpakwu, 2012).

According to Akpakwu (2012), the school administrator is the primary safety officer of the school, and the implementation of sustainable policies that will prevent any harm to the students, teaching and non-teaching staff and other education stakeholders feel safe within the school environment. The school administrators should concentrate not only on the physical safety of the school environment but also on the emotional and mental safety of the students and staff.

Administrators have other safety concerns for their teachers, staff and students. Though physical safety is often seen as the top priority, they should prioritize mental and emotional safety too. In every school, students are often dealing with difficult issues, both at home and at school. Sustainable school administration involves school health and security. It encompasses the protection of students from bullying and

violence as well as exposure to harmful substances such as radioactive chemicals, alcohol, hard drugs, and infectious diseases that can be acquired from the school environment.

R.Q2: What are the Causes of Environmental Pollution in the School Environment?

In the global south, the problem of inadequate funding has resulted in a dilapidated school environment that is not a threat to the staff and students in the school environment. Poor school plant planning is also a contributing factor because most schools are wrongly situated too close to the road and sources of noise pollution that causes distractions and lack of concentration among students. Some schools are also situated too far away from the cities, students have to trek miles before reaching school.

Another cause of environmental pollution in the school environment is poor personal hygiene of the students and teachers. This poor hygiene apart from the associated health problems also causes social rejection such as low confidence, bullying, absenteeism and dropout. WHO (2019) observed that the lack of regular environmental sanitation leads to a contaminated environment and life-threatening pathogens can be transmitted through contacts.

Several studies already pointed to the fact that greenery around the school environment could boost academic achievement. Kuo (2015) and Becker et al. (2017) Observed that the Views of greenery from classroom windows improve concentration and reduce heat rate and stress for both the students and teachers.

While the reverse is the case in schools without greeneries. (Li & Sullivan, 2017).

The rate of school enrollment over the years has led to excessive stress and a shortage of educational facilities. According to Yieke (2006), inadequate or lack of sanitation facilities disrupt the teaching and learning quality and can result in to increase in the rate of attrition, indiscipline, and dropout.

R.Q3: What are the Effects of Environmental Pollution on the Teaching and Learning Process?

Ensuring the safety security and good health of both the students and the educational officers in school is very important in school administration. Effective teaching and learning cannot take place in an environment where the health and safety of students and staff are being threatened. Couple with the fact that no meaningful learning process can take place in a dilapidated facility. It is worth noting that the aesthetic nature of the school can also motivate students to learn even better. Beautiful school surroundings with very good and beautiful classrooms well-furnished and well-equipped laboratories and libraries may stimulate the interests of the students and bring out the creative abilities in them. A beautiful-looking school is usually a source of pride to both the students and the members of staff of the school.

Asiyai (2011) opined that a safe school enhances the process of teaching and learning. This is because when students feel safe in school, they can pay attention to their studies leading to good academic performance. Also, Davis-Laughton (2012) opined that the environment of the school has a great influence on the

student's attitude towards learning. He stated that students are more focused and relaxed in a safe and healthy environment. If the assertion is true, therefore it can be inferred that an unsafe and unhealthy school environment can negatively impact the process of teaching and learning.

It has been established that various forms of pollution can be associated with various types of diseases, danger and injuries. For example, sound pollution can make students and staff not have good quality sleep at night which can result in tiredness and headache. This will certainly affect the process of teaching and learning negatively. Students may be sleeping during class activities and the teacher may be too tired to take control of his class or keep up with the task of teaching. It should be noted that students from schools located very close to airports, railroads, markets or very busy roads are most likely to be distracted in school which may lead to a low level of academic achievement. Also, the emissions from industrial establishments (smoke, exhaust and bad odour) and damaged sewage systems in the form of air pollution can irritate the eyes and throat. This will lead to the disruption of classroom activities; as students will not be able to see clearly, cough to clear their throat and struggle around to catch their breath. Such a classroom does not support effective teaching and learning processes. The students will not be able to develop a good attitude towards learning and the teachers will not be able to give their best performance (Ojo & Ogunshola, 2020).

Furthermore, the effect of environmental pollution can affect the rate of student attendance in school (absenteeism). Students who obtain injury in school due to a fall as a result of a damaged culvert or gully created by land erosion, or students

who mistakenly step on broken bottles or glasses will mostly stay at home or in the hospital to get their injuries nurtured back to well-being. This will affect the student in meeting his/her academic expectations. If the well-being of the education officer is badly affected due to constant exposure to environmental risks, the teacher may also not be regular in school to deliver on his duties. This will affect the process of teaching and learning in school. A dilapidated structure may affect the aesthetic nature of the school and this may discourage the attitude of the students towards learning (Mubita, Milupi, & Kalimaposo 2023). A leaking roof (as a result of acid rain over time) may damage laboratory equipment and facilities in the school library thereby denying the student the opportunity to access such facilities to aid their learning processes.

An environment that poses harm, risk and hazard to students and staff is generally not conducive to learning. A safe and healthy environment promotes good study habits that allow students to be regular in school and to be more attentive in the classroom during instructional delivery. It should be noted that a school officer who feels safe, strong and very healthy will likely deliver on his duties thereby leading to an increase in his overall level of productivity and job performance.

5. CONCLUSION, AND RECOMMENDATIONS FOR FUTURE STUDIES

The awareness of Environmental health is increasing both at the global north and global south. Thinking green has become normal and this has resulted in a shift in the education system. Schools now promote environmental health education and eco-

friendliness are now included in many school curriculums. For the school community to achieve sustainability approach the pollution challenges can be approached practically by updating management and informing the educators, staff and students of the core environmental challenges in the school and the way forward.

The understanding of the causes and effects of environmental pollutions on the teaching and learning process will make it possible for education developers and planners to educate, orientate and legislate on factors that will promote sustainable school environments that will positively impacts both the character and academic performance of the students.

The implication of this study on sustainable school administration is that school administrators and environmental planners will be able to put in place necessary measures that will prevent any forms of teaching and learning distractions from school plant site and environment. The findings of this study will also inform environmental planners to ban the erection and construction of any form of distractions that can affects the teachers and students especially in the industrialized urban school areas. In addition, the impacts of advancement in technology that causes more harmful ecologically waste due to profit maximization of some individuals and corporations will be further controlled by proper legislations and enforcement.

In view of these implications, government should maintain the quality of the environment by producing environmentally literate citizens through public orientation and environmental health promotion interventions.

Special budgetary allocation should be provided for the provision of facilities such as ventilated classrooms and offices and the student-teacher ratio should be adhered to prevent overcrowding.

Regular public health awareness among teachers, students and parents should be put in place to educate the stakeholders on environmental health hazard control and prevention.

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