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## Improving solid waste disposal in a basic school in the Greater-Accra Region of Ghana

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### ABSTRACT

The investigation looked at improving solid waste disposal in Potential Skills Academy, a Junior High School at Kwashieman in the Ablekuma-North District of the Greater-Accra Region of Ghana. In all two hundred and fifty one (251) individuals were sampled for the study. Out of the sampled population, a hundred and twenty-seven (127) were males and hundred and twenty-four (124) females. The instruments used were questionnaire, interview, and observation. Although there were enough dustbins on the school compound, the students were not making use of them. The solid wastes they generated were thrown randomly on the ground. The study review that this unpleasant attitude of the pupils were due to the removal of environmental science from the Junior High School (JHS) curriculum due to the new educational reform. It was also realised that teachers were not leading exemplary life for the students to emulate, and again pupils at the crèche, and nursery were not introduced to environmental cleanliness. Therefore, the students right from the nursery has little knowledge about good sanitation practices, and hence, show careless and lazy attitudes towards cleanliness in general. These improper ways of managing the environment were corrected by providing series of lectures on environmental cleanliness and also posting posters on the walls of the school compound and their classrooms, which always reminded them of the need to maintain environmental cleanliness. Environmental science study should be reinstated into the science curriculum for Basic Schools by the Ghana Education Service.

**Keywords:** Environment, Potential Skills Academy School, intervention, solid waste

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## INTRODUCTION

Nature is noted to be in equilibrium with the waste it produces. In a situation, whereby the production of waste exceeds nature's tolerance level, it could result in environmental pollution. Again, when waste produced in a particular community is not managed well, it normally results in a lot of health implications. Cunningham and Saigo recognised that human misuse of nature is not unique to modern times. This implies that humans' misuse of nature is not a current affair to the human race and thus it has been there for years [2].

The ever-increasing production of modern packaging materials such as; cans, plastics bottles, polythene bags, etc. added to other domestic refuse could degenerate into pollution and health implications, and poses a major threat to the health and well-being of millions of people and global ecosystem. In the congested areas in most of the cities in Ghana, large areas have been turned into refuse dumping grounds. Streams and lagoons, such as Odaw stream, Korle and Chemu lagoons all in Accra and its environs have become polluted due to the dumping of refuse [1].

Solid waste is not only polluting our water bodies but again also choking our drainage systems in our communities. Therefore, the drainage systems are unable to serve their purpose but rather have been turned into potential breeding grounds for pests and disease-causing organisms. Most farmlands are unable to support plant growth due to non biodegradable solid wastes that have accumulated in our lands, making germination of crops very difficult.

Ministries such as Environment, Science and Technology, Local Government, Municipal and District Assemblies and Education have all come to realize the alarming rate at which solid waste disposal is getting out and hence, the need to institute drastic measures/action to help curb the situation. As a result, the above Ministries have instituted immediate steps which are in action and some remaining on their drawing boards to salvage the solid waste menace. For example, Ghana Education Service is re-considering the study of ecology as part of the basic school curriculum. This we hope will go a long way to help our children know how to relate and appreciate the environment.

There are several disposal methods, such as anaerobic digestion, open dumps, sanitary landfills, gasification, pyrolysis, incineration and recycling, which administrators of our cities can adopt to salvage the waste generated.

With a plethora of methods listed above, there was the need to find immediate solutions to the solid waste generated in Potential Skills Academy, a basic school in the Ablekuma-North District in the Greater Accra Region of Ghana. From observation, although dustbins are located in each classroom and on the school compound, empty sachets of water, polythene bags and papers are found scattered on the floor of the classrooms and the compound.



The school as society for human development needs a very pleasant environment for teaching and learning to proceed smoothly. Therefore indiscriminate disposal of solid waste generated in the school, if not disposed well, could result in epidemic diseases, and make teaching and learning unfavorable.

Therefore, there is the need to inculcate in the students positive attitudes in keeping their school environment clean/neat.

The investigation seeks to address the following:

- to develop strategies of ensuring a clean and neat school environment.
- to inculcate in the students positive attitudes toward the environment, and
- finding solutions to waste management and disposal in the school.

Certain research questions were developed to solicit information from the students and staff of the school:

- i. What are the attitudes of students towards unclean compounds?
- ii. What are the causes of this negative attitude of students?
- iii. How can students' attitude towards the cleaning of the environment be improved?

## METHODOLOGY

The descriptive survey was used in this study. Due to the large population size of the school, survey was considered as the most appropriate method, which actually enabled the researcher to cover enough areas of the problems.

The school under discussion, Potential Skills Academy is a private one with a population of seven hundred and thirty-three (733) pupils, fifty (50) teaching and non-teaching staff. The school is made up of both sexes, and comprises of a Crèche, Nursery, Kindergarten, Primary and Junior High School. Each consists of a double stream - "A" and "B". The average number of pupils in a class is thirty-five (35). Samples of the population were chosen from each class starting from the nursery, primary six "A" and the entire Junior High School. The sample population was made up of two hundred and fifty-one comprising of females and male that took part in the study. One hundred and twenty-four were females and the remaining one hundred twenty-seven were also males.

The instruments used for this study were questionnaire, interviews, physical observation and examination of the solid waste generated by the pupils, and this was followed by direct counting. The questionnaire had both structured and semi-structured items. A total of sixteen questionnaires were used; eleven structured and five open items. The questionnaire went through a thorough screening by some of the teachers in the school, Science and English departments before being applied.



To ensure reliability of the instrument, the questionnaires were personally administered and monitored in order to eliminate influence and interference which could have changed the opinion of the investigation.

Several intervention strategies were adopted during the investigation, and some of them have been listed below:

1. The students were taken through several tuitions to create their awareness for the need of keeping the school environment and even their homes clean.
2. Messages on proper waste disposal charts were pasted on the walls of their classrooms and the school compound to remind them of the need to keep the environment clean.
3. Also pictures and video clips of neat environments were screened to encourage them on how to keep and maintain their environments or surroundings.

The responses of the structured questionnaire and the other research instruments used during the investigation were analyzed using the Microsoft excel, and these were later converted into percentages, bar- and pie-charts for easy interpretations.

## RESULTS

Findings of the investigation have been presented. It was realised that before the implementation of the interventions, the students' attitudes towards keeping the school compound and classrooms clean were not encouraging. This came to light when the students were interviewed before the introduction of the interventions. Most of the students did not know that they had roles to play when it comes to keeping the environment clean. The reasons for these attitudes were as a result of the following:

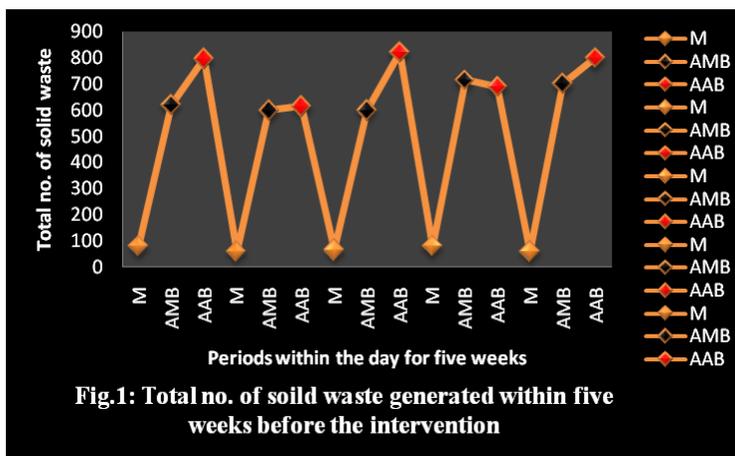
Most people in Ghana think that it is only the Government who should be responsible in keeping the environment clean. This has led to careless and lazy attitude of students' towards the cleaning of school compounds. As a result, even when students are depositing waste into dust bins, they never make sure whether the wastes have properly been put into dustbins thus littering the environment. Again, some of the dustbins were not properly covered even though there were lids, anytime the wind blows some of the rubbish were left scattered on the compound.

Notwithstanding even the above, most students in Ghana are not aware of the benefits of a clean environment. For example, most of the students interviewed made mention that people, like the Zoomlion and Zoil Eco-Brigade are employed to sweep the streets, and therefore, if they do not litter the street, what work would these people do, and hence, the students exhibited the same thought in their school, since, cleaners have been employed in the school.

Another observation made was that even the teachers who are expected to play exemplary roles in the school were not environmentally sensitive/friendly. They always asked the students to throw away solid waste they generate without finding out whether they have been properly disposed. The situation is probably a carry-on from our homes, where children are always asked to go and throw away refuse without educating them on the effect of improper disposal. Therefore, children are always seeking for opportunities to free themselves and do not willingly show interest in environmental cleanliness. The young pupils at the crèche and nursery were left out when it comes to the teaching of environmental cleanliness because we consider them to be very young in knowing how to keep the environment clean.

Nevertheless, there were no posters on the school compound to remind the students on the need to keep their environment clean. Note, it is very important that people are always or constantly reminded of the need of maintaining very neat surroundings.

The results after the introduction of the intervention were very tremendous and encouraging. The number of solid waste counted at regular intervals on the school environment reduced drastically. The students made sure that solid wastes were properly disposed into the dustbins. Lastly, students are now bold to tell their friends to pick up waste thrown on the ground.

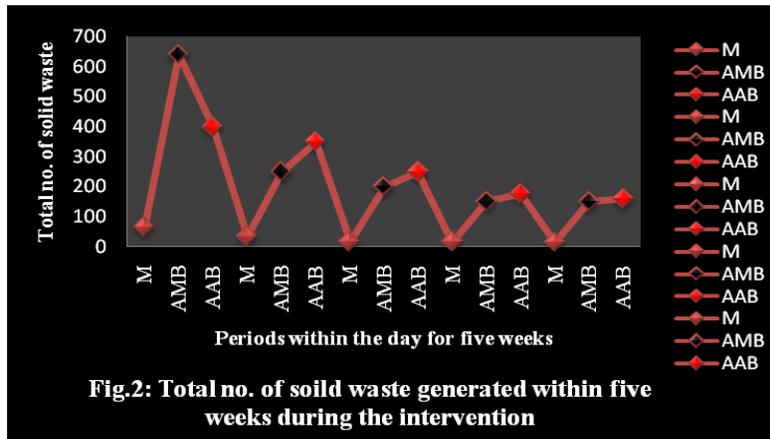


**Fig.1: Total no. of solid waste generated within five weeks before the intervention**

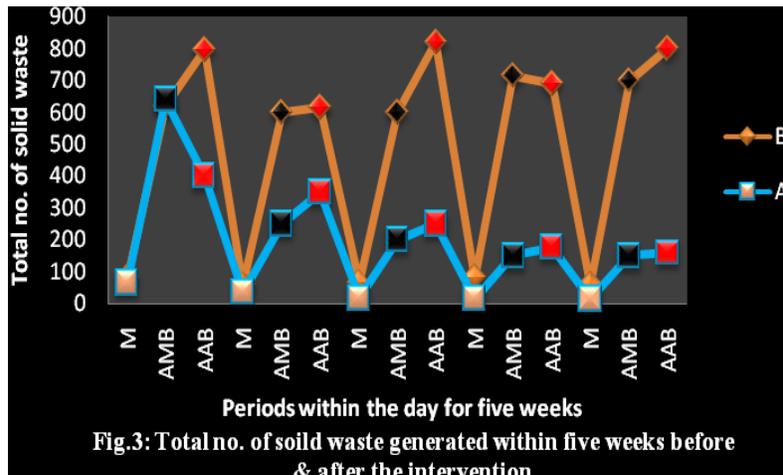
According to Fig. 1, before the introduction of the intervention, the total number of solid waste collected every morning was far below those collected after morning and afternoon breaks. With the exception of the (After Afternoon Break) AAB during the 4<sup>th</sup> week, the total number of solid wastes collected after every break being it morning or afternoon peaked up.

Below are the results of the findings before and after the introduction of the intervention. The graph (Fig. 1) shows the total number of solid waste generated in the Morning (M), After Morning Break (AMB) and After Afternoon Break (AAB) for a period of five weeks before the introduction of the intervention.

The result gathered for five weeks after the introduction of the intervention has been captured in Fig. 2.



As observed in Fig. 2, there was a downward trend of the solid waste generated after the introduction of the intervention within the five weeks.



The two graphs Figs. 1 and 2 were super-imposed as shown in Fig. 3, and this clearly shows that the introduction of the various interventions yielded a better result. Apart from the AMB (After Morning Break) which was almost the same, figures recorded for BI (Before Intervention) significantly out-striped those of AI (After Intervention).

Interview was also granted to two hundred and fifty-one (251) interviewees comprising students, teachers and cleaners. The following are the results generated from the application of the interview before and after introducing the intervention:

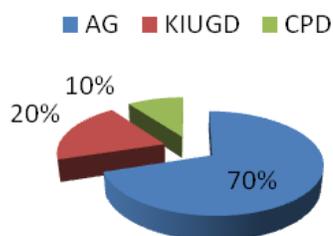
**Example one:**

Where do you dispose-off a solid waste, such as empty sachets and papers?

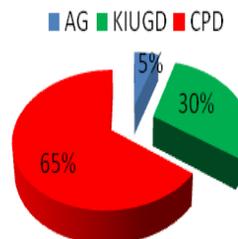
(CPD) - Carefully Put it in a Dustbin.

(AG) - Anywhere on the Ground.

(KIUGD) - Keep it until I get to a Dustbin.



**Fig. 4: Mode of disposal of rubbish before intervention**



**Fig. 5: Mode of disposal of rubbish after intervention**

Figure 1 clearly shows that the students were not making use of the dustbins provided on the school compound because 70% were just throwing rubbish on the ground, 20% only keep their rubbish until they get to a dustbins and while only 10% carefully put their rubbish in dustbins.

After the introduction of the intervention (Fig. 5), 65% CPD, 30% KIUGD and 5% AG were recorded; this clearly shows an improvement over Fig. 4.

**Example two**

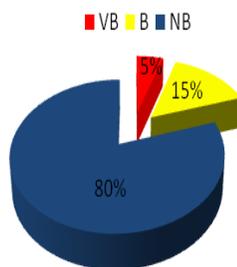
How do you feel when you see polythene and other solid waste on the ground?

(VB) Very Bad

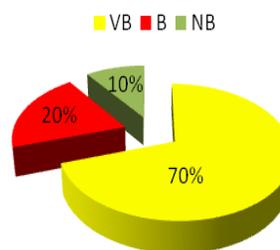
(B) Bad

(NB) Not Bad

Responses before and after intervention Figs. 7 and 8



**Fig. 6: Peoples' feeling on seeing rubbish around before intervention**



**Fig. 7: Peoples' feeling on seeing rubbish around after intervention**

From the responses given in Fig.6, 80% of interviewees saw nothing wrong (NB) with solid waste littered around the school environment or any other compound. It was very pathetic that 15% (B) and only 5% felt VB concerning littered environment or surrounding. The tide wave changed after the intervention was introduced as shown in Fig. 7, where 70% felt VB, 20% B and 10% NB in terms of a littered environment or surrounding.

### CONCLUSION

Any individual can easily judge from graphs 1 to 3 and charts 4 to 7 that after the introduction of the intervention there was tremendous improvement of students' perception towards the environment. This was clearly shown in the results of the items administered, and became well manifested practically in students attitude as the number of solid waste counted after the intervention reduced drastically.

The study revealed that the poor sanitary condition of the school was due to the:

1. Unwillingness on the part of the teachers to educate the pupils.
2. Misconception and ignorance on the part of the pupils towards the environment, and.
3. Removal of environmental studies from the science syllabus by the Ghana Education Service.

After the intervention, the students together with their teachers realised the need to protect and keep the environment clean.

Finally, it should be noted that the environment will gain its glory when people are well educated on the importance of a clean environment and the need to enforce by-laws.

### RECOMMENDATIONS

1. There is the need to include a period on school time-tables for sanitation education in schools.



2. Attention on environmental issues should be given to the pupils at the crèche and nursery, for what we teach them today is what they know in the future.
3. The environment and environmental pollution studies should be reinstated into the science syllabus for the basic schools by the Ghana Education Service.
4. Teachers should make sure posters are pasted on the school compound to remind students to keep the compound clean.
5. Awards should be given to deserving individuals and classes in terms of cleanliness after inspection.
6. The school administrations should always make sure there are enough dustbins with covers in their schools.
7. Teachers should consider themselves as role models on the need for environmental cleanliness and proper waste disposal, and not always instructing pupils what to do, but rather get involved.

### **ACKNOWLEDGEMENT**

To the Management, Teaching and Non-teaching Staff and Students, we say thank you for your contributions and support.

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