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TECHNOLOGY**

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KUMASI, GHANA.

WATER SUPPLY AND ENVIRONMENTAL SANITATION PROGRAMME



**SANITATION IN BASIC SCHOOLS – A CASE STUDY IN TANO-SOUTH
DISTRICT**

BY

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MSc. THESIS

FEBRUARY 2009

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KWAME NKRUMAH UNIVERSITY OF
SCIENCE AND TECHNOLOGY
KUMASI-GHANA**

**SANITATION IN BASIC SCHOOLS – A CASE STUDY IN TANO-SOUTH
DISTRICT**

By

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A thesis submitted to

The Board of Postgraduate Studies,

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In partial fulfillment of the requirement for the award of the,

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CERTIFICATION

I hereby declare that this submission is my own work towards the MSc and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ACKNOWLEDGEMENTS DEDICATION

To my loving & dear children

Morrison and Betty

May God richly bless you and grant you long life, AMEN!

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ABSTRACT

The Community Water and Sanitation Agency is mandated by the Government of Ghana to implement the Small Towns Water Supply and Sanitation Project. The overall goal is to reduce poverty through improvement of the health status of citizens living in rural areas and small towns by providing them with potable water and improved sanitation facilities. The aim of the study was therefore to come out with the current water and sanitation situations in schools in Tano South District of Ghana. The research has revealed that, the coverage of water and sanitation facilities in schools in the district are low; since the results showed that 53 % of the schools were without toilets facilities, while 83 % were without safe water. This was contrary to Ministry of Education Youth and Sports /Ghana Education Service Policy which requires that every school should have adequate water and sanitation facilities. The majority of the schools, 71 % burn their refuse during schools' instructional hours, which causes environmental pollution. The survey revealed that 30.0 % of the pupils washed their hands with soap before eating while 70.0% washed their hands without soap before eating. This means that only 30.0 % of the school children were practicing an essential do-it-yourself vaccine which is the effective way of interrupting the transmission of disease agents.

The least hygienic practice that was carried out in the district was hands washing after collection of refuse. The percentage of pupils who washed their hands with soap was 24.0% with 54.0% using only water to wash their hands. The remaining 22.0 % did not wash their hands. Indicator weighting system for sanitary facilities based on hygienic status, convenience, adequacy and technology type showed that 15 schools had total scores between 10 and 14 points out of 15 points for availability of human excreta facilities, 12 schools had total scores between 8 and 10 points out of maximum of 10 points for solid waste collection facilities and disposal methods. Similarly, 6 schools had total scores between 70 points and 100 points with six schools also scoring less than 50 points, for the hygiene behaviour and practices of school children and 10 schools scored at most 20 points out of 40 points for food vendors. The study revealed that 65.0 % of the SHEP Co-ordinators were not performing their duties effectively due to lack of funds, personnel and logistics, and this could affect the sanitation and hygiene of the schools.

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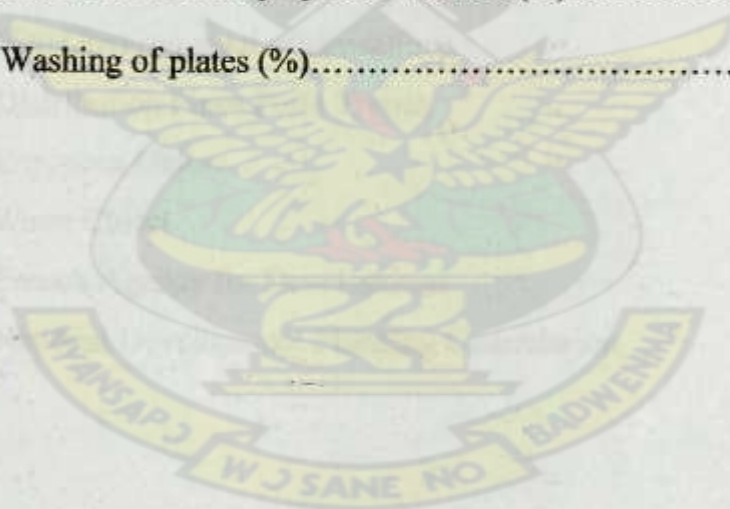
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GLOSSARY OF ABBREVIATIONS

CBOs:	Community Based Organizations
ESP:	Environmental Sanitation Policy
MOEYS:	Ministry of Education, Youth & Sports
CWSA:	Community Water and Sanitation Agency
WECF:	Women in Europe for a Common Future
SSHE:	School Sanitation and Hygiene Education
PTAs:	Parents Teachers Associations
GWCL:	Ghana Water Company Limited
OPD:	Out Patient Department
JHS:	Junior High School
VIP:	Ventilated Improved Pit
KVIP:	Kumasi Ventilated Improved Pit
R/C:	Roman Catholic
CRD:	Chronic Respiratory Diseases
NGOs:	Non Governmental organisations
DPPT:	Distribution Pipes Point Trench
EU:	European Union
WC:	Water Closet
FAD:	French Agency for Development
NDPC:	National Development Planning Commission

1.0 INTRODUCTION

1.1 Background

The Government of Ghana is implementing a National Community Water and Sanitation Programme with the overall goal of reducing poverty through improvement of the health status of citizens living in rural areas and small towns by providing them with potable water and improved sanitation facilities. Sanitation is the development and maintenance of a clean, safe and pleasant physical environment in all human settlements to promote social, economic and physical well being of all sections of the population (Mensah, 2008 unpublished). The Community Water and Sanitation Agency is therefore mandated to implement the Small Towns Water Supply and Sanitation Project. However, over the years of implementing the Community Water and Sanitation Programme, it has been observed that there has been a noticeable unequal distribution of water supply and sanitation facilities, in schools which is creating a situation where sanitation and hygiene have lagged behind in terms of coverage and access to services, and proper design in some districts and towns. Tano South District, like many other districts in Ghana is no exception. Bechem Township has access to potable water supply but other towns in the districts are not connected to this water supply, the current schools sanitation situations are therefore not known. Under such conditions, the district would not derive the maximum health benefits that are expected to follow the provision of safe water, and health programmes organize for school children and students.

It is against this background that the study places a high premium on assessing sanitation situations in schools in the District.

1.2 Problem statement

The importance of sanitation in the development of every child and for most of the Millennium Development Goals cannot be over emphasized. Promotion of good health and environmental sanitation in schools and institutions of higher learning could only be achieved if percentage of schools with access to adequate toilet facilities could be 70.0 % by the end of the year 2005; and 87.7 % by the year 2010 and the percentage of schools with access to drinkable water supply could be 55.4 % in 2005 and expected to rise to 77.7 % by the year 2010 (MOEYS/GES, 2003). The actual sanitation situation on the ground however is not known in most schools. Tano South District falls within this category.

The problems of sanitation if well documented can lead to proper sanitation in the district and create awareness for policy makers and the Heads of schools in Ghana to sit up to the tasks outlined in the School Sanitation Policy in Ghana

1.3 Objective

To assess the current sanitation situations in the basic schools in the District, the vendors on school compound and hygienic behaviour and practices.

Specific objectives include the following:

- To assess the existing situations of human excreta, solid waste facilities, water supply situations.
- To determine the hygiene behaviour and practices of pupils/ students and the food vendors on schools' premises.
- To examine the activities of School health Committee's established in the schools based on the sanitation policy.

1.4 Justification

Bechem and Derma have benefited from small town water supply systems which many schools could easily be connected and others can easily access it; but water and sanitation problems could be major challenges which many schools face. Under such conditions the communities may not derive the maximum health benefits that are expected to follow the provision of safe drinking water for the communities.

The study will therefore come out with the current water and sanitation situations in schools in the district, and create the needed awareness for policy makers to recognize this unacknowledged phenomenon in order to direct their effort and resources towards improving sanitation and waste disposal in the schools in Tano South District, and in Ghana as a whole.

1.5 Research Questions

- What are the water and sanitation facilities available in schools?
- What are the current conditions of water and sanitation facilities in schools?
- What are the hygienic behaviour and practices of school children?
- What are the hygienic behaviour and practices of school vendors?
- What are the functions of school health committees?

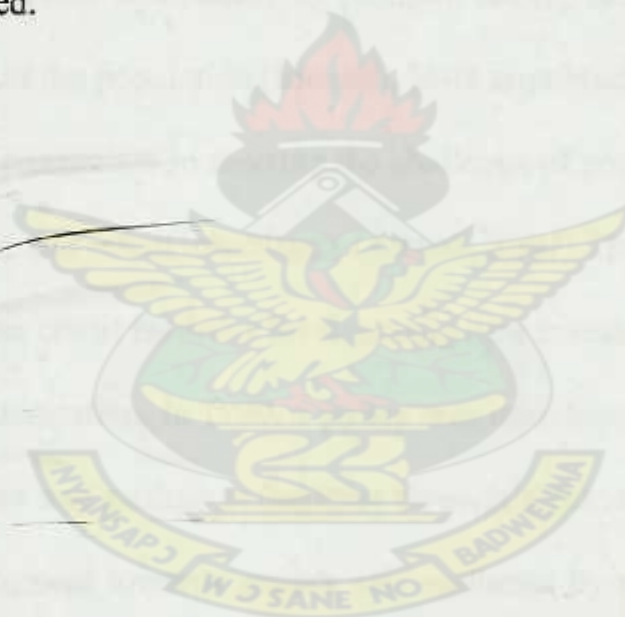
1.6 Scope of work

The scope of the study covers solid wastes, human excreta disposal, and hygienic practices from pupils in

- Lower Primary,

- Upper Primary,
- Junior High Schools,

In each school the type of toilet technology, solid waste dumping site or technology for managing solid waste, the hygienic behavioural practices of school children and food vendors were assessed.



2.0 LITERATURE REVIEW

Sanitation is the development and maintenance of a clean, safe and pleasant physical environment in all human settlements to promote social, economic and physical well being of all sections of the population (Mensah, 2008 unpublished).

Ghana faces serious constraints in meeting the challenge of providing adequate water and sanitation for its rural and urban inhabitants (Awuah, 2007). The country heavily relies on loans, grants and other credit facilities for financing new investments for the development of water supply and sanitation. In 1999, a policy was introduced with the aim of ensuring sustainability of water and sanitation facilities through a demand response approach and shift from the government towards greater self-reliance by user communities. For the sanitation sector the policy is towards simple sewerage systems for urban areas and single household type for rural areas and small towns, but improving sanitation facilities in schools has not been given the needed attention.

2.1 Conditions of school sanitation in rural areas and small towns

Women in Europe for a Common Future (WECF, 2007) found worse conditions of school sanitation in the rural areas of all its working countries, for example in Romania, Moldova, Armenia, Ukraine or Uzbekistan; not because the citizens or school staff do not take care of the sanitation facility, but because the system itself cause many problems.

Due to the system the pit latrines are extremely bad smelling, and in summer it produces high amounts of flies, which poses a health risk. Often there are no separate latrines for

girls and boys, so children and school staff hardly visits the facility as much as possible. During the period of menstruation girls prefer to stay at home and are allowed by the school staff to take off some days from school. Exclusions have a gendered aspect; girls who are unable to access clean, safe and separate toilets and hand washing facilities, may disproportionately drop out of school at puberty, or even earlier. Mostly in the sanitation facility there is no anal cleansing material available for the facility users. In some schools the users bring for themselves toilet papers from home. Adequate appropriate sanitation technologies should be developed to address these problems. School Sanitation and Hygiene Education, necessary for the safe, secure and healthy environment for children to learn better and face the challenges of future life. This understanding is very much a part of the policy of Government of India (Glewewe et al, 1995). From policy to programme, School Sanitation and Hygiene Education (SSHE) has now become a reality of school centric development action being realized by most of the schools. School is important for cognitive, creative and social development of children. So the launching of programme that is integrated with broader sanitation program to ensure that all the schools especially rural schools in the nation have basic sanitation and drinking water facilities and good hygiene practices are taught to the children. The SSHE programme is participatory in nature.

2.2 School health policy in Ghana

The Ghana Education Service has a school health policy, which states that schools have to establish School Health Committees to ensure:

- supervision of sanitation in schools
- supervision of the activities of school vendors (Glewewe et al, 1995).

- provision of good drinking water and sanitation facilities
- proper refuse disposal sites
- provision of hand washing facilities
- development and implementation of health education programmes at school

It was based on this policy that School Health and Education Programme (SHEP) was introduced in Ghana Education Services to promote the health and well being of all children and impact on the family and community. It encompasses activities and services which will ensure the child's physical, mental, emotional, social and moral growth and development.

Even though this policy exists it lacks the necessary strategies and funds for implementation.

It is important that proper planning is made to identify programmes that will have a large impact and prioritize for adoption (Awuah, 2007).

2.3 Water and Sanitation Related Diseases

The prevalence of water and sanitation related diseases continue to be a major concern with children being the most at risk. Improved hygiene practices with access to appropriate sanitation facilities are essential if transmission routes of water and sanitation related diseases and prevalent helminth infestations in children are to be overcome.

Schools play an important role in children's health providing an environment that can either develop useful life skills on health and hygiene or present a risky place where diseases can be transmitted. School sanitation and hygiene is an important issue and one that is needed to be assessed.

2.4 Research findings concerning impacts of improved sanitation and availability of facilities on academic performance

Studies in Uganda showed that facilities in schools seem to have a larger impact on academic performance than socio-economic status (Heyneman, 1976). In Jamaica physical infrastructure, pedagogical inputs and climate had impacts on children's academic performance (Glewewe et al, 1995). In a country's economic and educational development, school effectiveness is likely to depend more on factors that encourage attendance and retention than those factors more directly linked to the development of cognitive competencies (Lloyd et al 2000).

Studies carried out in Ga District with a population 500, 000 in 799 basic schools showed that the pupils in private schools performed academically better than those in the government schools.



Table 2.1: Toilet and water facilities etc in basic schools in Accra (%)

Number of schools	playground	desks	toilets	water	library	computer
Government 49%	95	97	63	54	8	3
Private recognized 36%	82	92	59	87	27	37
Private and unrecognized. 15%	66	61	91	63	7	12

Source: www.hoover.org/publications/edunext/321754.html

Private schools did better than Government schools in spite of the fact that the Government schools had trained teachers as compared to private schools which did not have trained teachers. Interesting to note was the fact that the private schools had more toilet facilities and water supply systems than the Government schools (Table 2.1) (Awuah, 2007).

2.5 Definition of Hygiene

Hygiene refers to practices associated with ensuring good health and cleanliness. The scientific term "hygiene" refers to the maintenance of health and healthy living.

The term "hygiene" is derived from Hygieia, the Greek goddess of health, cleanliness and sanitation. Hygiene education itself is defined as all activities aimed at encouraging behaviours and conditions that help to prevent water and sanitation related diseases (IRC 1991). In this context it is taken to include activities such as increasing the use of toilet facilities, encouragement to look after facilities, hand washing with soap at the critical times, safe collection and storage of drinking water and personal hygiene. It applies not only to the students, but the staff including teachers, labours, toilet attendants and health assistants and PTA's. It can also be applied to the stages of designing or maintaining the facilities in a way that is suitable for children, well located and easy to clean.

2.6 Hygiene and Sanitation in Schools in Ghana

In Ghana, diarrhoea has been identified as the second most common health problem treated in outpatient clinics. It accounts for 84 000 deaths annually in Ghana with 25% of these being children under 5 years (Ghana News Agency, 2003).

Lack of basic sanitation combined with poor hygiene each year contributes to the deaths of approximately 15000 Ghanaian children under the age of five from diarrhoea diseases (Ministry of Health, 2002).

Despite these stark statistics however, coverage of sanitation and the awareness about hygiene in schools are very low. Contrary to Ministry of Education Science and Sports/Ghana Education Service policy which requires that every school should have sanitation facilities, estimates show that 31% of the schools were without toilets (Ghana Education Service, 2003).

Access to hand-washing facilities in the proximity to latrines and eating-places prevent the practice of hand-washing in schools. Research shows that more than 40% of the diarrhoea cases can be avoided if hand washing is done at critical times (Bolt and Cairncross, 2004).

2.7 Challenges of introducing hygiene education in our schools

The fact that hygiene education is not examinable as a subject, lack of skilled teachers, lack of facilities to promote hygienic practices could lead to lack of interest in the subject on the part of the students.

The others are lack of community support, Communities lack water and sanitation facilities and tend to use facilities in schools, lack of proper planning for schools, lack of sanitary labourers, transportation and storage, lack of treatment plants and disposal facilities and poor designs and construction of toilet facilities and lack of support from society for staff who works with waste i.e. poor cultural attitudes.

2.8 Hygienic practices among urban dwellers and School hygienic practices in schools.

In a study by Awuah unpublished for 10 schools in the Kumasi metropolis, it was observed that children pick waste materials on the compound with their hands beginning from class 1 up to the JSS level. Seventy –five percent of the 200 children interviewed use tap water whiles the other 25% purchase water for drinking.

Ninety-five percent wash their hands after visiting the toilet. However, soap availability was only 35.5%. About 85% wash their hands before eating. After sweeping and picking only 55% wash their hands.

In the disposal of refuse was 20% deposited on it selected site on the compound, 55% put solid waste in the public receptacles, and 22.5 % in refuse bins provided in the school and 15% burn the refuse. Hundred percent of the students stated that hygiene education is taught in class and all of them also agreed that hygiene education is very important. Thirty-five percent had bins in their class rooms and 65% did not have bins.

All the children wanted hand basins for hand washing in the schools. Preference for the position of the basins varied (Awuah 2007).

2.9 Hand washing

Evidence suggests that improved hand washing can have a major impact on public health in any country and significantly reduce the two leading causes of childhood mortality – diarrhoea disease and acute respiratory infection. This is because hand washing with soap can prevent the transmission of a variety of pathogens; it may be more effective than any single vaccine or hygiene behaviour. Promoted broadly enough, hand washing with soap can be viewed as an essential do-it-yourself vaccine. Almost every household in the world, regardless of economic status, has soap. Hand washing with soap at key times, however, is not widely practiced. If the millennium development targets for reduction in child mortality are to be met, hand washing habits must be improved along with access to safe water and sanitation.

Hand washing interrupts the transmission of disease agents and so can significantly reduce diarrhoea and respiratory infections, as well as skin infections and trachoma. A recent review (Curtis and Cairncross 2003) suggests that hand washing with soap, particularly after contact with faeces (post-defecation and after handling a child's stool), can reduce diarrhoea incidence by 42-47 percent, while ongoing work by Rabie et al.

suggests a 30 percent reduction in respiratory infections is possible through hand washing. This remains true even in areas that are highly faecally contaminated and have poor sanitation. Another current study found that children under 15 years living in households that received hand washing promotion and soap had half the diarrhoea rates of children living in control neighborhoods (Luby et al. 2004). Because hand washing can prevent the transmission of a variety of pathogens, it may be more effective than any single vaccine. Promoted on a wide-enough scale, hand washing with soap could be thought of as a 'do-it-yourself' vaccine.

Hand washing with soap reduces the incidence of diarrhoea. When we wash our hands with soap we are removing the germs that cause us to be sick from our hands. In each day, as we move around we pick up germs from various places like touching people, food, contaminated surfaces and animals.

2.9.1 Proper way of washing hands

The best way to wash your hands is under running water. This way nobody else uses the dirty water. You can also use water in a bowl if you don't have running water. However, the quantity of water should be adequate and where possible, you can use warm water.

- Wash your hands with water and rub an adequate amount of soap on your hands
- Gently but firm rub your hands together making sure that you clean in-between your fingers, under your finger nails, your palms, back of your hands up to the wrist. The longer you rub the better. You can rub your hands for between fifteen seconds up to a minute.

• Rinse your hands well

2.9.2 Hand washing with soap

Hand washing with soap reduces the incidence of diarrhoea. When we wash our hands with soap we are removing the germs that cause us to be sick from our hands. In each day, as we move around we pick up germs from various places like touching people food, contaminated surfaces and animals.

Proper Hands washing is one where by the hands are washed with soap under running water. This is normally done in schools by using Veronica Buckets. Thus buckets with tap at the bottom to allow water to come out when the tap is opened.

2.9.3 Consequences of not washing your hands

Many diseases are spread through hand contact and we can get any of these diseases from not washing our hand frequently. Diseases like common cold, flu and Diarrhoeal infections are the most common. Some skin infections are also gotten from poor washing and bathing practice. If you don't wash your hands frequently, you can easily infect yourself with germs when you touch your eyes, nose or mouth. You can also infect others when you touch them (hand shake), touch things which they would also touch (door handle). Poor hand washing practice can also lead to food related illnesses.

2.10 Innovation to improve schools sanitation in South Africa

Teaching people, especially school children to desist from using dirty and unhygienic public toilets and protest loudly and vigorously each time they encounter a dirty public toilets. Our innovation is different and unique in that it seeks to correct this scenario by adopting an approach that uses private sector specialists in Sanitation Education and Maintenance Programmes as the people who maintains clean environment in public schools and places. Private sector like The Clean Shop does the cleaning and hygiene

maintenance of school toilets by employing parents as toilet cleaners and monitors. The parents are properly trained, motivated, supervised and equipped to undertake the massive cleaning task. The result is that the cleaning and hygiene maintenance of school toilets becomes effective and sustainable. Toilet paper which was not usually available, which leads to rapid blocking of the water borne systems when other wiping materials such as socks, newspapers, stones, grass, etc., are used, is issued to each child on weekly bases.

Initially building of new toilet facilities was thought to be a solution of getting rid of dirty toilets, but it was rapidly found that this was not enough as even new toilets very quickly became dirty, blocked and unusable. Hygiene and Sanitation education has been found missing destroying any chance or an attempt to train pupils in the proper use of clean toilets and wider (Clean Shop South Africa, 1996}.



3.0 RESEARCH METHODS

3.1 Study Area

Tano South District is the gateway to Brong Ahafo Region through Kumasi-Sunyani Road.

It has a current population of about 70,000 people. The communities and small towns in the district are Bechem, Techamntia, Derma, Brosemkro, KwameNsiakrom, Akuradadaa Biokrom Kwasu, Breme and Mansini.

The main activities of the people are farming and trading; together with government workers in institutions such as Hospital and health Centres, schools and Banking institutions.

Derma and Teachmantia are some of the largest tomatoes growing communities in the country. Both teachers and pupils in these communities do tomatoes farming.

Their level of income fluctuates due to the seasonal change in price, of vegetables.

However, quite a large number of the populates are unemployed in Bechem and other small towns and therefore have low level of income compared to Techimantia and Derma

The topography of the land is undulating with many primary natural drains in and around the communities. Bechem and Derma are been supplied with water from Community Water and Sanitation Agency (CWSA) projects while Techmantia has water from Ghana Water Company Limited (GWCL).

There has not been any outbreak of any water and sanitation related disease, in the District for the past ten years. However, worm infestations, malaria and waist pains are

the common O.P.D. cases according to the District Director of Health, and also records from Bechem Government Hospital from 2005 to 2007.

Figure 3.1: Map of Tano South District



Legend: ● Study site

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3.2 Data Collection

3.2.1 Sampling

The total sample of the study will consist of 30 Primary and Junior High School (JHS) in the District. This was based on the location of schools and the type of stream (whether single stream or double stream); since all schools on the same compound use the same facilities.

3.2.2 Desk study/Literature review

Data on Out Patients Department records on water and sanitation related diseases was collected from all the health institutions (i.e. Bechem Government Hospital, Techimantia health centre, Dermaa health centre and Brosankro health centre.).

Information was collected from District Education Directorate, Tano South District, Bechem; and District Assembly, Tano South District, Bechem.

3.2.3 Structured Questionnaires

Two main types of questionnaires were designed for the study. One was targeted at the school vendors whilst the second was targeted at the pupils and students. The questionnaire for vendors was used to elicit information on the hygiene behaviour and practices and pupils' questionnaire were used to collect information on the existing solid waste and human excreta facilities in schools in terms of quality, quantity, appropriateness and operations and maintenance activities.

It was also used to elicit information on current levels of water supply in schools in terms of quantities, quality and reliability of sources.

3.2.4 Structured (Spot Checks) Observation

Observation was one of the most important sources of information on hygiene behaviour

and sanitation in schools. Spot Checks were used to collect clues or 'signs of behaviour' amongst the pupils. These checks were used to observe the use and maintenance of the school human excreta facilities, hand washing practice, maintenance of refuse dump sites, and possession of personal handkerchiefs and other things.

These spot checks were conducted in each school.

3.2.5 Field Visits

Field visits were made to observe the physical location of water and sanitation facilities in the community and schools and the level of access pupils have to them. These visits were made with the assistance of the School Health Coordinator.

3.2.6 Quality checks

Quality checks were conducted on the data that was collected at the end of each day. The data was checked for its accuracy and consistency. The overall check on the data collected was done before it was analyzed. This final check was to ensure that all fillings in the questionnaires and the observation sheets were filled appropriately.

3.2.7 Checklist for stakeholders

Checklists were designed to interview the following stakeholders:

- Tano South District Assembly
- Parents Teachers Associations in some schools
- Headteachers and Health teachers of schools
- Regional Community Water and Sanitation Agency
- District Director of Education and District SHEP Co-ordinator

3.3 Data Analysis

Table 3.1 Indicators for data analysis of availability of facilities

A. Availability of facility				
Toilet facilities	Water Closet	KVIP/VIP	Pit latrine	No latrine
Weight	5	4	2	0
Urinal facilities	Boys urinal with drain	Boys urinal Without drain	Girls urinal with drain	Girls urinal Without drain
Weight	5	3	5	3
water facilities	Hand pump bore hole	Mechanised Bore hole	Harvest water	No water
Weight	5	4	2	0
Hands washing facilities	Individual washing under running water	Communal washing bowl	No basin	Napkin/towel
Weight	5	2	0	5
Waste collection facilities	Bin with lid	Bin without lid	Basket use as bin	No bin
Weight	5	4	2	0

Basis for assigning weights to indicators to measure availability of facilities are type of technology, presence or absence of structural defects / quality, reliability, anesthetic, gender considerations, closeness to school and cleanliness of surroundings.

Rating and total score

Rating(R) = Number of Respondents (N) * weight assigned to facility/Practice

$$N = 5 \text{ or } 2$$

Where n is number of indicators for a facility / practice

Total score = $\sum_{i=0}^n R$ (i=1,2,3...n), for each school

Table 3.2 Indicators for data analysis of hygiene behaviour and practices

B. Hygienic behaviour and practices				
Hands washing of school children	Before eating	After eating	After visiting toilet	After refuse collection
Weights (with soap)	5	5	5	5
Weights (without soap)	2	2	2	2
Refuse Disposal Methods in schools	Re-use	Site burying	Site burning	
Weights	5	4	3	
food vendors practices	Dishing of food	collection of money with	Medical Examination	Washing of plates
Weights	with spoon = 5	different hand for dishing = 5	With certificate = 5	after one person use = 5
Weights	With hand = 0	the same hand for dishing = 0	Without certificate = 0	after many people use = 0

The weights were assigned to indicators for practices based on behaviour and practices that are safe and hygienic

4.0 RESULTS AND DISCUSSIONS

The results obtained from the analysis for all the 30 schools using the weights assigned to the various indicators and the summary of the results in percentages for the whole district are discussed in this chapter.

4.1 Human Excreta Facilities

4.1.1 Availability of toilet facility

The analysis indicates that only 14 Primary and Junior High schools had toilet facilities on the schools' compound representing 46.7% by the end of 2008, with 53.3 % having no toilet facilities. But the Ministry of Education, Youth & Sports and National Development Planning Commission Operation Manual for Education Planning, Budgeting, Monitoring and Evaluation at the District Level (2003), has the fourth policy goal as 'Promotion of good health and environmental sanitation in schools and institutions of higher learning. This could only be achieved if percentage of schools with access to adequate toilet facilities could be 70.0 % as at the end of 2005; and 87.7 % by the year 2010 This indicates that provision of toilet facilities in basic schools in the District was very low which could affect their good health and environmental sanitation.

The pupils in the remaining 53.3% use public ones during schools' instructional hours and therefore cover distance between 250 – 400m away from the schools compounds or sometimes use the facilities in the sister schools nearby which causes another congestion at the sister schools.

4.1.2 Adequacy toilet facilities

The percentage of schools that have toilet facilities was 46.7%. These facilities were made up of 16.7 % two seater KVIP/VIP, which are meant for house holds with small household size. These facilities were used by 5 schools with enrollment between 200 to 260 children, therefore the least number of pupils per squatting hole was 100; as compared to Ghana guideline for institutional latrines where 50 persons per squatting hole. Again, 16.7 % six seater KVIP/ VIP was also serving 5 schools with the least number of pupils per squatting hole was 82; this was still far more the standard, while 13.3 % were using pit latrine, hence no school had adequate toilet facilities except Akobro Community JHS where the number of persons per squatting hole was less than 50, which is the Ghana guideline for institutional latrine in Ghana. The pit latrines were in poor conditions, unhygienic and unsafe for the pupils especially those at the Lower Primary (Figure 4.1). So the District Assembly should provide more adequate and hygienic toilet facilities for all the schools if good Health, Education and Sanitation could be achieved by 2015, as outlined in the MDGs.

The common anal cleansing materials used by pupils were papers and these papers were removed from the pupils' old/used exercise books. This has very serious implications, since the pupils lose their materials which could have been used as reference materials. However, the anal cleansing materials were burnt everyday as much as possible

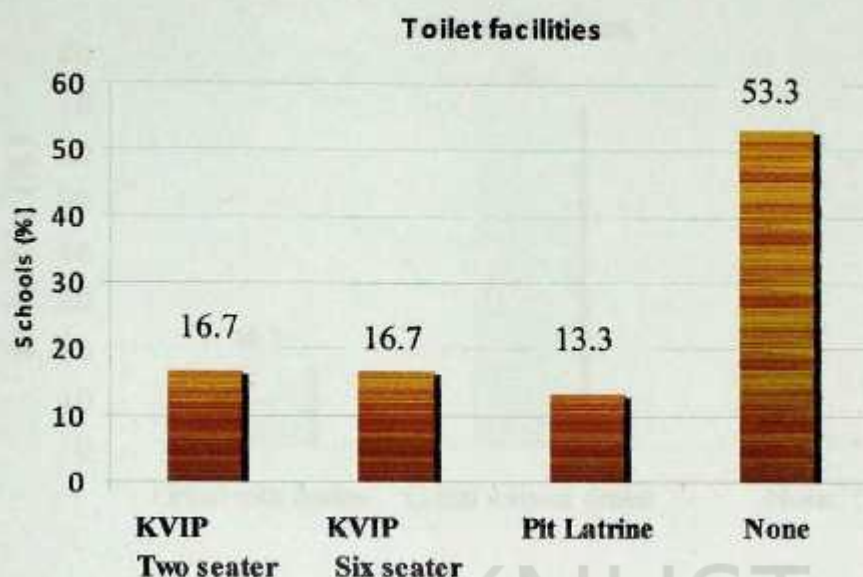


Figure 4.1: Types of toilet facilities in schools (%)

4.1.3 Urinal Facilities

All the schools visited had urinal for both boys and girls, except Dwomo Community JHS which has no urinal, but some of the urinals were not hygienic at all. From figure 4.2, 70% of the schools had urinals without proper drains to allow the urine to get out easily, hence making both inside and surroundings unhygienic, with stagnant water at some places resulting in mosquito breeding and causing odour nuisance; whiles 3.3 % do not have urinal at all (Figure4.2).



Figure 4.2: Types of urinal facilities in schools

Indicator weighting system for sanitary facilities based on hygienic status, convenience, adequacy and technology type showed that fifteen schools had total scores between 10 and 14 points out of 15 points for availability of human excreta facilities (Table 4.1). These were the schools with toilet and urinal facilities for boys and girls which were hygienic, adequate and close to the pupils. However, the schools without toilet facilities had low points of 6 and 8, since such schools only scored points for urinal facilities but not toilet, because each urinal facility could score a maximum of 5 points, hence two urinals for boys and girls could score a maximum of 10 points. It was observed during the field visit that Dwomo Community was the only school without urinal facilities, and this was confirmed during the analysis since it was the school with the least score of 4 points, which was obtained from the toilet facilities available for them.

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Table 4.1 Availability of human excreta facilities

Name of School	Total score (15)	Name of School	Total score (15)	Name of School	Total score (15)
Akobro Comm.	10	Brosankro Comm.	6	Derma Meth.	10
Bechem R/C J.H.S	6	Brosankro R/C	6	Titia Holy Trinity	14
Bechem ST. Joseph	6	Dwomo R/C Prim.	6	Titia Islamic	12
Bechem S.D.A.	12	Dwomo Comm.	4	Titia Comm.	8
Bechem Presby	12	Dwomo Meth.	6	Titia Meth. Prim.	8
Bechem R/C Prim.	10	Derma S.D.A	10	Titia Meth J. H. S.	6
Bechem Meth. Prim.	10	Derma R/C	10	Titia Presby J.H.S	6
Bechem Meth. J.H.S.	10	Derma Islamic	14	Titia St. Joseph	10
Girls Model J.H.S.	6	Derma Presby	8	Titia Presby Prim.	10
Breme J.H.S	6	Derma Comm.	6	Titia Hope Prep.	6

4.2 Solid Waste Facilities in Schools

4.2.1 Types of bins used in schools

The percentage of schools with dustbin with lid was 18, dustbin without lid 22.7, basket use as bin 12 while 47.3 % of the pupils did not have any bin at all (Figure 4.3). It was observed during the field visit that the schools without the bins had polythene and papers littered the compounds during school hours therefore had unhygienic sanitary conditions. Dust bins and dust pans are very essential for waste / refuse collections in schools if the sanitation and hygiene in schools and the health status of pupils could be good always.

The basket used as litter bins were opened and therefore allowed the wind to blow the polythene and the papers which had been placed in the basket. However, the schools with

the bins with lid had good environmental sanitation since the refuse could not get out easily.

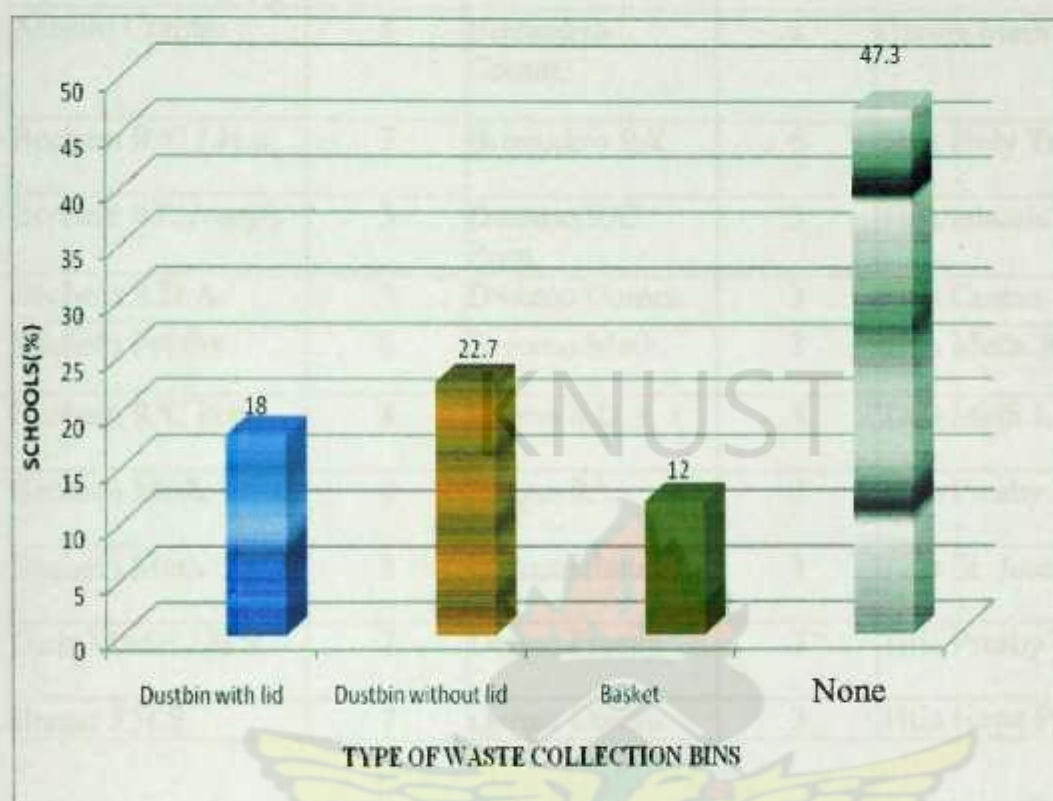


Figure 4.3: Type of waste collection containers

Again, indicator weighting system for solid waste facilities disposal methods based on hygienic status, convenience, adequacy and technology type showed that twelve schools had total scores between 8 and 10 points out of maximum of 10 points for solid waste collection facilities and disposal methods (Table 4.2)

Table 4.2: Solid waste collection facilities and disposal methods

Name of School	Total score (10)	Name of School	Total score (10)	Name of School	Total score (10)
Akobro Comm.	8	Brosankro Comm.	8	Derma Meth.	8
Bechem R/C J.H.S	7	Brosankro R/C	6	Titia Holy Trinity	8
Bechem ST. Joseph	3	Dwomo R/C Prim.	3	Titia Islamic	4
Bechem S.D.A.	3	Dwomo Comm.	3	Titia Comm.	9
Bechem Presby	6	Dwomo Meth.	3	Titia Meth. Prim.	8
Bechem R/C Prim.	8	Derma S.D.A	3	Titia Meth J. H. S.	8
Bechem Meth. Prim.	8	Derma R/C	3	Titia Presby J.H.S	8
Bechem Meth. J.H.S.	3	Derma Islamic	3	Titia St. Joseph	6
Girls Model J.H.S.	7	Derma Presby	7	Titia Presby Prim.	8
Breme J.H.S	7	Derma Comm.	3	Titia Hope Prep.	8

Water facilities

The research conducted has indicated that only five schools out of the 30 had water facilities on schools' compound by the end of the year 2008 in the District. This figure represents 16.7 %. The facilities available were made up of one hand pump borehole and four mechanised bore holes from the community. Only one school was having rain harvest facility; with the remaining 80.0 % fetching water from either public standpipe or bore holes / mission houses (Figure 4.4). But the percentage of schools in Ghana that had access to drinkable water supply was 55.4 % in 2005 and it is expected to rise to 77.7 % by the year 2010 (MOEYS/GES), therefore the coverage was very low in the District. Surprisingly, all the schools with water facilities are in Derma community which had

benefited from CWSA project; except Techimantia Holy Trinity, which is located at Techimantia.

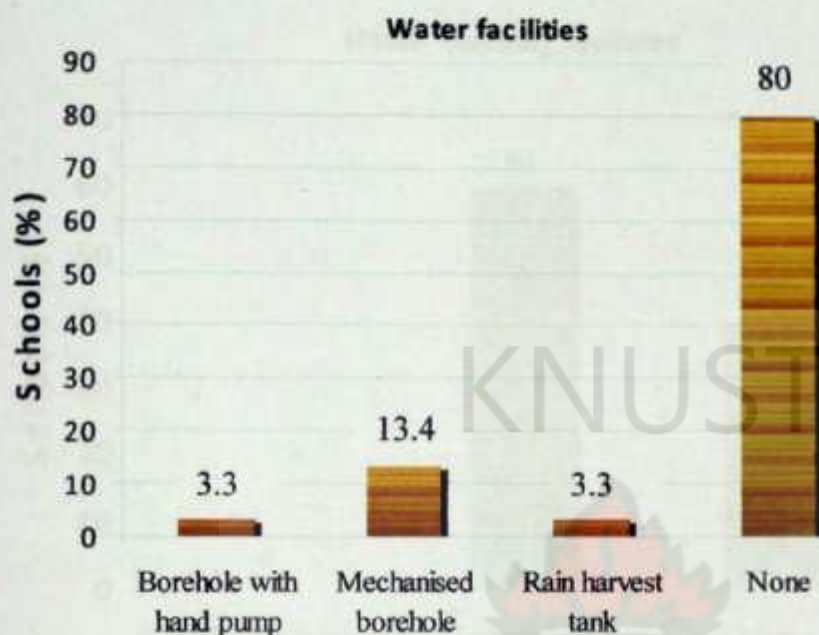


Figure 4.4: Types of water facilities in schools

4.4 Hygiene / Hands Washing Facilities in Schools

None of the schools visited had proper hand washing facilities prescribed by GES in the schools. Eventhough, it has been indicated in the figure 4.5 that 60% of the schools visited had hand washing facilities and 40.0 % did not have; these were facilities such as communal washing bowl, towels or napkins and soaps, where every child washed his/her hands in the same bowl and wiped the hands with the same towel. This method of hands washing could cause contamination of the water and promotes worm infestations rather than preventing it. Proper hand washing facility is tap / running water from any bucket with tap beneath the bottom so that water comes out from the tap whenever the tap is

opened, since it is not always possible to have tap or stand pipes on all the schools compounds.



Figure 4.5: Types of hand washing facilities

Meanwhile, the indicator weighting system for water and facilities based on hygienic status, convenience, adequacy and technology type showed that two schools had total scores between 10 and 12 points out of maximum of 15 points with 19 schools obtaining zero or 2 points (table 4.3). This indicates that all the 19 schools score no point for water and proper hands washing facilities. The facilities are not available (Figure 4.4&4.5); therefore the children in these schools were denied of performing the proper hygienic practices which could affect their health and hygienic status. The pupils in these schools compete with the publics to fetch water every morning to schools which sometimes delay

their time and as a result come to classroom late hence, could affect the pupil's academic work. Others also cross the main roads in the community to fetch water to school which have some level of risk attached to it. Bechem St Joseph JHS is one of such schools; the pupils in this school cross the Kumasi –Sunyani main road to fetch water from St Joseph Training College for pupils to use during school time.

Table 4.3: Availability of water and hands washing facilities

Name of School	Total score (15)	Name of School	Total score (15)	Name of School	Total score (15)
Akobro Comm.	0	Brosankro Comm.	0	Derma Meth.	0
Bechem R/C J.H.S	2	Brosankro R/C	7	Titia Holy Trinity	12
Bechem ST. Joseph	2	Dwomo R/C Prim.	2	Titia Islamic	6
Bechem S.D.A.	9	Dwomo Comm.	0	Titia Comm.	2
Bechem Presby	0	Dwomo Meth.	0	Titia Meth. Prim.	7
Bechem R/C Prim.	7	Derma S.D.A	4	Titia Meth J. H. S.	2
Bechem Meth. Prim.	7	Derma R/C	0	Titia Presby J.H.S	2
Bechem Meth. J.H.S.	2	Derma Islamic	11	Titia St. Joseph	2
Girls Model J.H.S.	0	Derma Presby	0	Titia Presby Prim.	2
Breme J.H.S	0	Derma Comm.	0	Titia Hope Prep.	7

Findings

The research has come out that, the coverage of water and sanitation facilities in schools in the district are very low. Contrary to MOEYS/GES policy which requires that every school should have adequate water and sanitation facilities, the results shows that 53. 3% of the schools were without toilets facilities, while 83.3 % were without safe water.

4.5 Hygiene Behaviour and Practices of School Children

The total scores from 150 school children for their hygiene behaviour and practices obtained from the weights attached to them for all the 30 schools showed the percentage of schools' children who wash their hands after each hygienic practice.

4.5.1 Hands washing before and after eating

The study revealed that 30.0 % of the pupils washed their hands with soap before eating while 70.0% washed their hands without soap before eating. This means that only 30.0 % of the school children were practicing an essential do-it-yourself vaccine which is the effective way of interrupting the transmission of disease agents and also significantly reduce diarrhoea and respiratory infections, as well as skin infections and trachoma. However, 70.0 % of the pupils were not safe and could easily become infectious because water alone could not remove infectious microbes or pathogens.

Similar situations were observed after eating. Thus, 44.0 % of the pupils washed their hands with soap after eating; but 56.0. % of them washed their hands without using soap after meals. Once again, 56.0 % of the school children were not saved (Figure 4.6).

4.5.2 Hands washing after visiting toilet facilities

The analysis revealed that the percentage of pupils who washed their hands with soap after visiting toilet was 61.3 %; which was the highest among the hand washing practices. Those who did not use soap was 29.3 % (Figure 4.6), the reasons were among the following:

Soap was available only in 9 out of 30 schools because the school authorities did not provide it and soaps were not provided close to the toilet facilities at the schools where soaps were available. The children who did not wash their hands frequently with soap

after visiting toilet facilities, could easily infect themselves with pathogens when they touch their eyes, nose or mouth. They could also infect others when they touch them (hand shake), touch things which they would also touch (door handle). They could also get food related illnesses due to poor hand washing practice. .

4.5.3 Hands washing after refuse collection

The least hygienic practice that was carried out in the district was hands washing after collection of wastes or refuse. The percentage of pupils who washed their hands with soap was 24.0%, with 54.0% using only water to wash their hands. The remaining 22.0 % did not wash their hands after refuse collection (Figure 4.6). Some of the reasons provided by children who washed their hands after toilet and refuse collection were as follows:

- To avoid food contamination
- To avoid or prevent themselves from getting diarrhoea
- To reduce worms infestations through finger nails
- To make themselves hygienic

Meanwhile, refuse collection is another way of contracting microbes, especially when the refuse is made up of rotten cabbages, tomatoes and peels of banana. Researches have shown that access to hand-washing facilities in the proximity to latrines and eating-places promotes the practice of hand-washing in schools. Research has shown that 42% of the diarrhoea cases could be avoided if hand washing with soap is done after visiting toilet facilities and after collection of refuse; therefore 76.0 % of the pupils were at risk since they did not practice an essential do-it-yourself vaccine, which is hand washing with soap. .

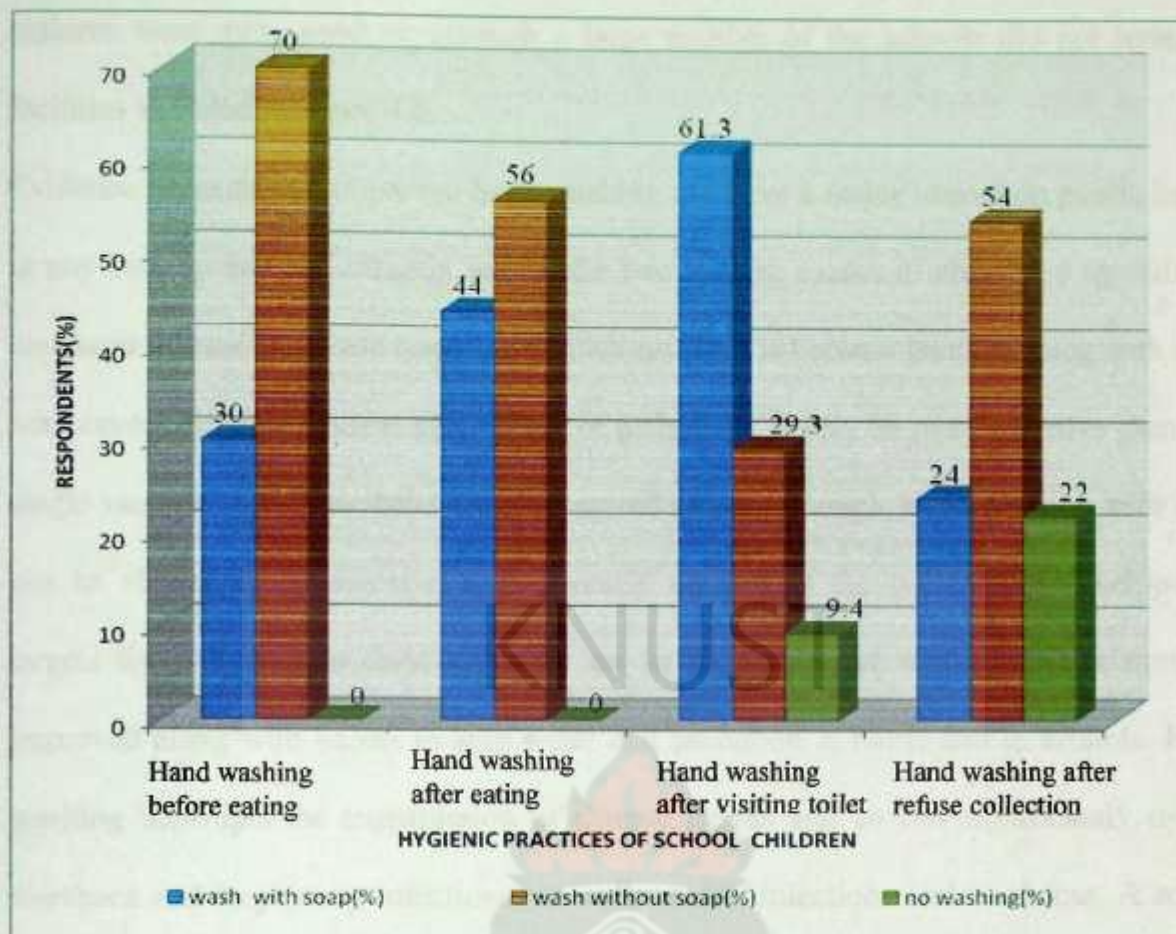


Figure4.6: School children who wash their hands with soap and without soap (%)

Again, the indicator weighting system for hygienic behaviour and practices showed six schools had total scores between 70 and 88 points out maximum of 100 points while five schools scored less than 50 points (Table 4.4), for the hygiene behaviour and practices. These scores indicate that the remaining 19 schools had total scores between 50 and 70 points. These schools were schools without some of the water and sanitation facilities, hence, if the schools without the facilities are provided with the needed facilities and improve the conditions then the hygienic practices of the pupils would improve and more schools could score higher marks; since the hygiene behaviour and practice of school

children were quite good eventhough a large number of the schools did not have the facilities as stated in figure 4.6.

Evidence suggests that improved hand washing can have a major impact on public health in any country and significantly reduce the two leading causes of childhood mortality – diarrhoea disease and acute respiratory infection. This is because hand washing with soap can prevent the transmission of a variety of pathogens; it may be more effective than any single vaccine or hygiene behaviour. Promoted broadly enough, hand washing with soap can be viewed as an essential do-it-yourself vaccine. If the millennium development targets for reduction in child mortality are to be met, hand washing habits must be improved along with access to safe water and sanitation at home and in schools. Hand washing interrupts the transmission of disease agents and so can significantly reduce diarrhoea and respiratory infections, as well as skin infections and trachoma. A recent review (Curtis and Cairncross 2003) suggests that hand washing with soap, particularly after contact with faeces (post-defecation and after handling a child's stool), can reduce diarrhoea incidence by 42-47 %, while ongoing work by Rabie et al. suggests a 30 % reduction in respiratory infections is possible through hand washing. This remains true even in areas that are highly faecally contaminated and have poor sanitation. Another current study found that children under 15 years living in households that received hand washing promotion and soap had half the diarrhoea rates of children living in control neighbourhoods (Luby et al. 2004).

Table 4.4: Hygiene behaviour and practices of school children (hands washing) in schools

Name of School	Total score (100)	Name of School	Total score (100)	Name of School	Total score (100)
Akobro Comm.	60	Brosankro Comm.	64	Derma Meth.	49
Bechem R/C J.H.S	85	Brosankro R/C	54	TitiaHoly Trinity	61
Bechem ST. Joseph	66	Dwomo R/C Prim.	51	Titia Islamic	58
Bechem S.D.A.	52	Dwomo Comm.	42	Titia Comm.	67
Bechem Presby	76	Dwomo Meth.	55	TitiaMeth. Prim.	52
Bechem R/C Prim.	88	Derma S.D.A	41	Titia Meth J. H. S.	65
Bechem Meth. Prim.	59	Derma R/C	72	Titia Presby J.H.S	34
Bechem Meth. J.H.S.	79	Derma Islamic	67	Titia St. Joseph	65
Girls Model J.H.S.	70	Derma Presby	49	Titia Presby Prim.	56
Breme J.H.S	65	Derma Comm.	62	TitiaHope Prep.	69

4.5.5: Refuse collection in schools

The analysis revealed that 88.4 % of the pupils used dustpans to collect refuse and wastes except rubbish which was being picked with their hands; the remaining 11.6 % used their bare hands to collect refuse such as kenkey peels, banana peels, garbage, rotten vegetables, etc (Figure 4.7). These children were unhygienic, unsafe and always at risk when they pick refuse from the ground in the morning especially if it rained the previous night, since lack of basic sanitation combined with poor hygiene each year contributes to

the deaths of approximately 15000 Ghanaian children under the age of five from diarrhoea diseases (Ministry of Health, 2002).

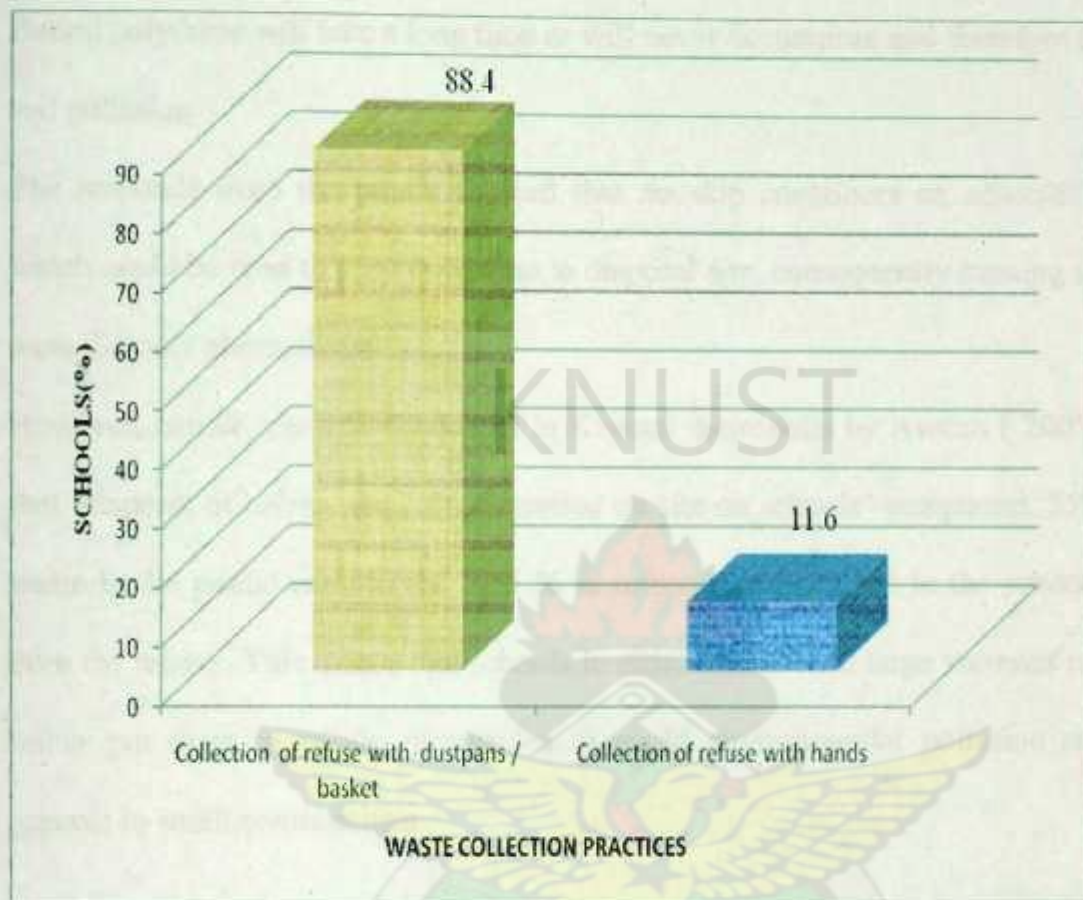


Figure 4.7: Refuse collection in schools (%)

Refuse disposal /minimization methods in schools

The methods of refuse disposal in schools in the Tano South District were found to be only two; that is 71.3 % of the pupils' burn their refuse at least once a week, with the remaining 28.7 % buried their refuse for at least once a term or until the pit becomes full before they are burnt (Figure 4.8). But burning causes a lot of environmental pollution and also interrupt with lessons if the site is close to classroom blocks. The other method, re-use was not practice in schools

The reasons for the adoption of these options were as follows:

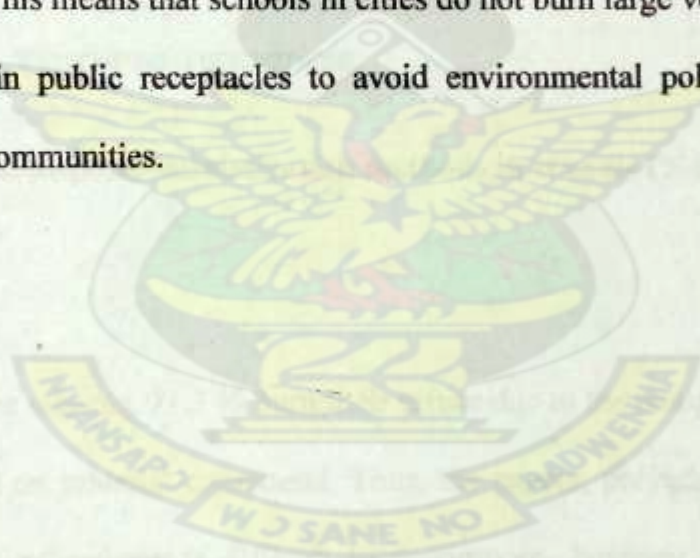
The refuse were usually made of polythene, papers, kenke banana peels and rubbish.

Burning under controlled supervision was the easy way of treating this type of refuse.

Buried polythene will take a long time or will never decompose and therefore could cause soil pollution

The responds from the pupils showed that no skip containers on schools' compound which could be used to send the refuse to disposal site, consequently burning and burying were the only alternatives.

However, earlier research conducted in Kumasi metropolis by Awuah (2007) indicated that disposal of refuse was 20% deposited on site on schools' compound, 55% put solid waste in the public receptacles, 22.5 % in refuse bins provided in the schools and 15% burn the refuse.. This means that schools in cities do not burn large volumes of refuse but rather put them in public receptacles to avoid environmental pollution compared to schools in small communities.



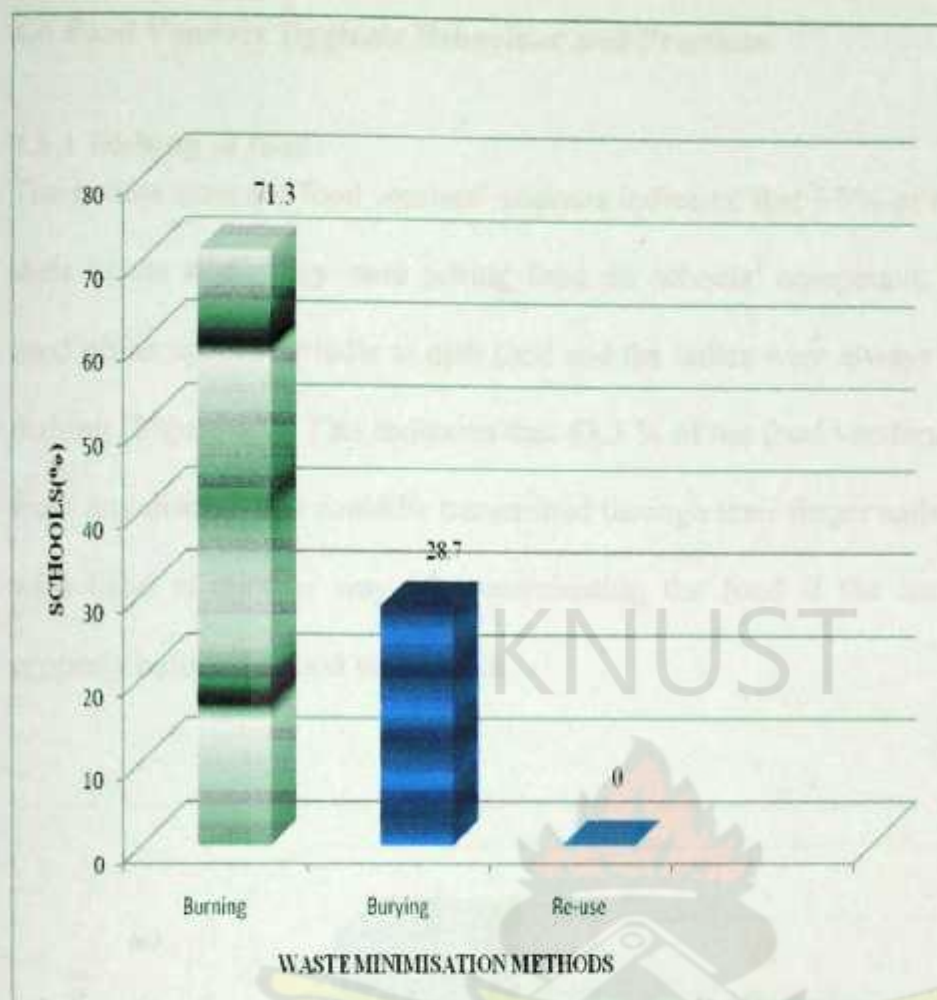


Figure 4.8: Refuse disposal /minimization methods in schools (%).

Finding

The majority of the schools, 71.3 % burn their refuse due to the components of the refuse that are generated on schools' compound. Thus, the papers, polyethene and rubbish are easy to burn; the polyethene is difficult to decompose, however, the burning causes environmental pollution during schools' instructional hours.

4.6 Food Vendors Hygienic Behaviour and Practices

4.6.1 Dishing of food

The results from the food vendors' analysis indicated that 57 % of them dished food with their hands when they were selling food on schools' compound. The remaining 43 % used either spoons or ladle to dish food and the ladles were always inside the bowls after dishing (Figure 4.9). This indicates that 43.3 % of the food vendors protected themselves from any disease that could be transmitted through their finger nails since dishing of food with hand is another way of contaminating the food if the hands were not washed properly before the food was dished

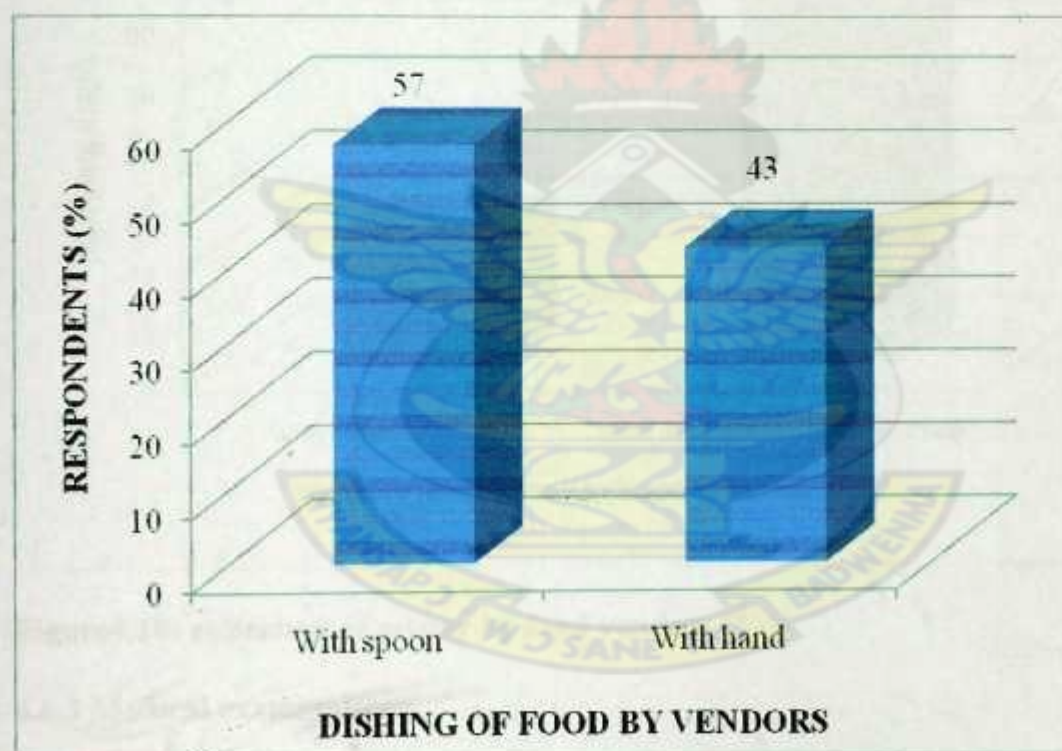


Figure 4.9: Dishing of food by food vendors (%)

4.6.2 Collection of money

The analysis revealed that 78.0 % of the food vendors were using right hands to dish food and at the same time collect money when selling food to school children. This could increase the chances of pathogenic infections and therefore not good hygienic practice.

But 22.0 % was using different hand (left hand) to collect money when selling food, hence 22.0 % was practicing proper hygienic practice (Figure 4.10).

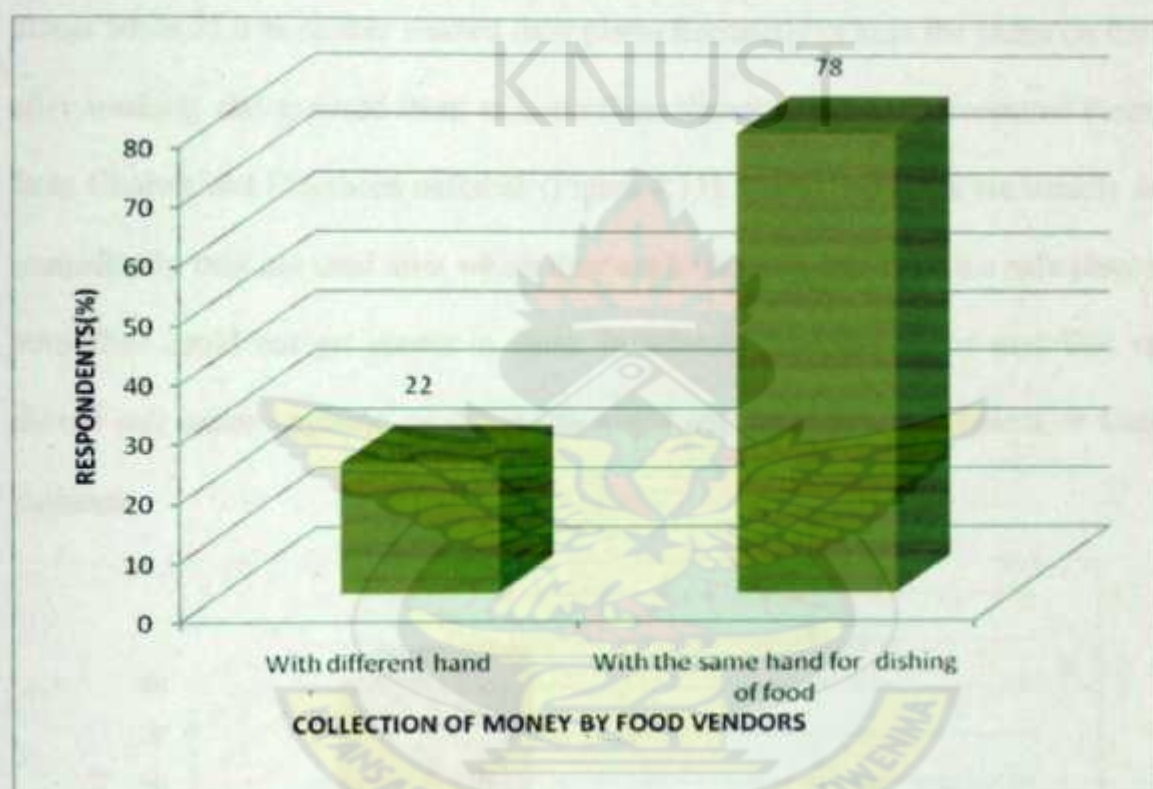


Figure 4.10: collection of money by food vendors (%)

4.6.3 Medical examinations

All the 60 food vendors who were selected in the thirty schools had been issued with identification cards. These identification cards were given to them after they had been screened by the environmental health officers in collaboration with the medical officers/health personnel in the District. The cards were issued to only those who were considered

to be fit and healthy by the health personnel. Those who are usually screened out are referred to hospitals for proper treatments for three months before they are screened again. The medical tests or examinations include some basic diseases or easily transmitted diseases such as TB, Measles, Typhoid fever and Chronic Respiratory Diseases.

4.6.4 Washing of plates

The analysis showed that 75.0 % of the vendors washed their plates and kept them in safe places while 25.0 % neither washed their plates frequently or kept the plates on the tables after washing and exposed them to houseflies; therefore have not protected themselves from Cholera and Diarrhoea outbreak (Figure 4.11). Plates and bowls are usually washed immediately they are used after which they are kept in an enclosed in a safe place where houseflies could not get access to them. In schools the GES policy says that vendors should sell under hygienic conditions to avoid any incidence of Cholera or Diarrhoea outbreak.

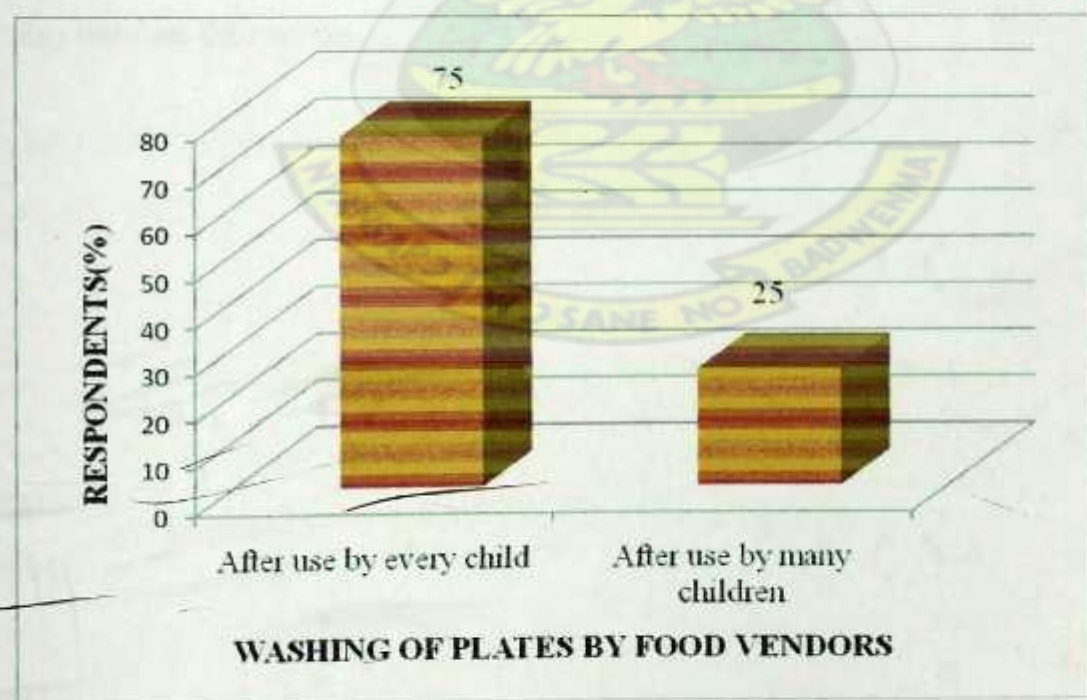


Figure 4.11: Washing of plates (%)

Once again, the indicator weighting system for hygienic behaviour and practices of food vendors showed nine schools had total scores between 30 and 35 points out of ideal score of 40 points while ten schools scored at most 20 points (Table 4.5); which means that these vendors' behaviour and practices were unsatisfactory. These low scores were due to the wrong practices such as dishing of food and collection of money with the same hand due to ignorance and lack of education on the part of the food vendors. Thus, the places where vendors dished food with ladles / spoons had total scores above 20 points, and this happens to be twenty schools.

Unfortunately, the vendors' responds showed that they did not notice anything wrong if they dish food and collect money with the same hands so if the vendors are made aware of the consequences of these unhygienic practices through workshops or group meetings in cluster schools to educate them, then their practices would be very good, which would also improve their scores.

Table 4.5: Hygiene behaviour and practices of food vendors

Name of School	Total score (40)	Name of School	Total score (40)	Name of School	Total score (40)
Akobro Comm.	25	Brosankro Comm.	35	Derma Meth.	23
Bechem R/C J.H.S	28	Brosankro R/C	25	Titia Holy Trinity	35
Bechem ST. Joseph	34	Dwomo R/C Prim.	20	Titia Islamic	20
Bechem S.D.A.	30	Dwomo Comm.	25	Titia Comm.	15
Bechem Presby	30	Dwomo Meth.	25	Titia Meth. Prim.	20
Bechem R/C Prim.	30	Derma S.D.A	25	Titia Meth J. H. S.	30
Bechem Meth. Prim.	25	Derma R/C	20	Titia Presby J.H.S	30
Bechem Meth. J.H.S.	23	Derma Islamic	20	Titia St. Joseph	20
Girls Model J.H.S.	20	Derma Presby	30	Titia Presby Prim.	20
Breme J.H.S	25	Derma Comm.	20	Titia Hope Prep.	25

SUMMARY OF AVAILABILITY OF FACILITIES AND PRACTICES

The school with the best sanitary facilities was Techimantia Holy Trinity and it had the overall score of 34 points out of ideal score of 40 points. Ironically, this school had the overall score of 96 points and placed 8th out of 30 schools for the hygienic behaviour and practices. However, Dwomo Community had the least score of 7 points for facilities and it was among the last four schools with poor hygienic behaviour and practices with overall score of 65 points. Hence, the hygienic behaviour and practices of school children was not dependent on the water and sanitary facilities available in the schools but the individual character or the way they have been brought up (Table 4.6).

Table 4.6: Overall scores for availabilities and practices

Name of School	Facilities (40 points)	Practices(140 points)
Akobro Comm.	17	65
Bechem R/C J.H.S	15	113
Bechme ST. Joseph	11	100
Bechem S.D.A.	24	82
Bechem Presby	18	106
Bechem R/C Prim.	25	118
Bechem Meth. Prim.	29	84
Bechem Meth. J.H.S.	15	112
Girls Model J.H.S.	13	90
Breme J.H.S	14	90
Brosankro Comm.	14	99
Brosankro R/C	19	82
Dwomo R/C Prim.	11	71
Dwomo Comm.	7	67
Dwomo Meth.	9	80
Derma S.D.A	17	66
Derma R/C	13	92
Derma Islamic	26	97
Derma Presby	15	79
Derma Comm.	11	82
Derma Meth.	24	72
Holy Trinity	34	96
Titia Islamic	22	78
Titia Comm.	19	82
Titia Meth. Prim.	23	72
Titia Meth J. H. S.	16	95
Titia Presby J.H.S	16	64
Titia St. Joseph	18	85
Titia Presby Prim.	18	76
Titia Hope Prep.	21	94

4.7 School Health Policy

The school health policy states that school health committee should be formed in all schools to perform their functions. The research is to find out if the committees have been

put in place or efforts are been made to put them in place, the members of the committees where they exist and also assess their functions. According to GES Policy for Education Planning, Budgeting, Monitoring and Evaluation (2003), School Health Committees should be made up of: the Headteacher, the Health teacher / SHEP Co-ordinator, a member from the community / PTA and other member(s) of staff. Unfortunately these committees were not present in all the 30 schools visited. However, the Headteachers and SHEP Co-ordinators performed the functions of the health committee with the assistance from teachers on duty / other teachers. The functions of the health committee which were to be assessed are:

- supervision of sanitation in schools
- supervision of the activities of school vendors
- provision of good drinking water and sanitation facilities
- provision of proper refuse disposal sites-
- provision of proper hands washing facilities
- development and implementation of health education programmes at schools

4.7.1 Supervision of sanitation in schools

The sanitation of the schools' compound of all the 30 schools was cleaned. Every school compound was swept whenever I visited the place. The weeding portions of the schools were also cleaned during the first and second weeks after re-opened. Trees are planted on the entire school compound which creates very conducive atmosphere and environment with fresh air. But 36.4 % of the schools had food vendors' corners with peels and plastics littered the compounds; and 47.3 % of schools without litter bins (Figure 4.3) had plastics and papers littered the compound during afternoon time; therefore the

supervision of sanitation was not satisfactory in 43.3 % of the schools in the Tano South District since the schools without bins had sanitation problems.

4.7.2 Supervision of the Activities of Schools' Vendors

The activities of school vendors in school were not supervised frequently. Out of 30 Headteachers responded only 2 had been going round to check the quality of food and the sanitation at the canteen. The remaining 28 Headteachers only inspect the vendors' certificates after which they are allowed to sell on the schools' compound. The teachers did not show much concern about the kind of foods that are sold on the compound.

The Headteachers did not ensure that the food vendors provide tables and benches for the pupils to use. Only two Headteachers Dwomo R/C Primary Headteacher and Bechem R/C Primary informed me that the sellers had been cautioned to provide table for the pupils to use; as a result, the pupils either squat or stand behind trees and classroom blocks to eat as stated earlier on. The District environmental health officers did not go round frequently to inspect vendor's certificates after the certificates have been issued / renewed for them. This gives room for those who do not possess the certificates to sell.

The District Health Ho-ordinator at the District Education Directorate should organize workshops for food vendors to educate them on the following according to the GES policy objectives for Health Education Programmes:

- * The basic foods and their source suitable for the pupils
- * The avoidance of the use of too much additives (i.e such as salt petre, food colour, etc), to prevent Diarrhoea, nausea and abdominal pains etc.

- * The avoidance of the use of dirty water to wash the plates throughout time of sell.
- * The importance of provision of hand washing facilities close to them.
- * The need for the provision of tables and benches.
- * The importance of keeping personal hygiene, etc.

But these workshops were not organized due to financial constraints therefore the vendors could not get access to these workshops but the analysis showed that about 70.0 % of the vendors had been meeting the Co-ordinator in groups in their schools and advise them to sell under hygiene conditions the remaining 30.0 % received no advice, hence could have some negative effects on the children.

4.7.3 Provision of good drinking water and sanitation facilities

From figure 4.4, 80.0 % of the schools had no good drinking water facilities on the schools' compound. These schools depend on public ones as discussed above.

Also 53 % of the schools had no toilet facilities on the schools' compound but improvised urinals had been constructed in all the schools with the exception of Dwomo Community JHS. These facilities were not hygienic and adequate as required by the school health policy. The few facilities available were in poor conditions which did not motivate the pupils to retain on schools compounds till closing. The reasons behind this were that:

- * ~~Some of the PTAs did not support provision of water and sanitation facilities.~~
- * ~~The schools did not show interest to pay the 5% which was been paid by the community, and hence they were not connected.~~

- * Lack of funds to pay the 5% for the connection to the CWSA projects.
- * No legal support for the collection of development dues/fees from the pupils, so provision of such facilities is difficult.

4.7.4 To ensure proper refuse disposal sites

The refuse dump sites in the schools were located any how. Twelve (12) schools had their refuse dump site within 50m from the classroom blocks; others have their refuse sites located at least 50m away from the classroom blocks.

The refuse were burnt usually on Fridays under teachers supervision. This was to prevent any unexpected fire outbreak on the schools compound. This is in line with the policy which states that proper refuse dump sites are to be provided in every school.

4.7.5 Provision of proper hands washing facilities

The hands washing facilities in all the schools which had hand washing facilities were communal washing bowls (Figure 4.5), which is not proper hands washing facilities. The washing bowls were placed in front of the classrooms because all the pupils washed their hands in the same bowls, therefore those with worms in their finger nails contaminate the water easily and cause others to be infested with worms. The G.E.S policy recommended that the hands washing should be done under running water. Since schools did not have tap waters on compounds, buckets with tap beneath the bottom were recommended by GES to be used in schools. But none of the schools visited was using this type of bucket or had tap water on the school compound so that hands washing could be done under running water.

Again, many of the schools did not have soap, which also contradicts the policy. Reasons for not having the facilities were stated as:

- * Lack of funds to secure the facilities.
- * The soaps bought by Head teachers to be used in schools were usually stolen by the pupils, when placed besides the washing bowls.
- * The pupils did not practice the hand washing at home; hence did not make use of the facilities in schools.

4.7.6 Development and Implementation of Health Education Programmes at Schools

The health committees are to ensure that adequate health education programmes/workshops should be organized for the food vendors. There is the need for frequent training of the health teachers to be able to delivery or perform the following duties on school compound.

- * Administer first aid to pupils during instructional hours.
- * To assist other teachers to inspect physical mental and eye infection and dental carries.
- * General fitness of both teacher and pupils.
- * The physical appearances and personal hygiene of the children with the help from other teachers.

However, 65 % of the Health Co-ordinators was not performing their duties in schools due to the following reasons.

The Headteachers did not show interest and there were no motivations given to the SHEP Co-ordinators.

- * The frequent transfer of the SHEP Co-ordinators that had been trained usually calls for training programmes for another teacher(s).
- * Lack of funds and logistics also hinders the Co-ordinators activities and programmes.

So the SHEP co-ordinators were not performing their duties due to lack of funds personnel. The strategise in the school health policy could be implemented very effectively if the needed incentives, resources, funds and logistics are provided by the G.E.S.

4.8 Views from Stakeholders

Interviews from the stakeholders in the Ghana Education Service for the provision of water and sanitation facilities on schools' compound and the monitoring of activities of food vendors were conducted and their responds and letters released from their offices have been analysed below.

4.8.1. Directors of Ghana Education Service and the Health Co-ordinators

The responds and records from the District Directorate of GES showed that plans had been made for the provision of water and sanitation facilities on schools compound. But the problem was a nationwide problem which could not be solved within a short time. Long term measures were put in place to consider a certain number of Districts every year. Tano South District was one of the districts to be considered next year, if all things being equal. These provisions were made in collaboration with CWSA, and other NGOs. Circulars would be sent out by CWSA through District Director of Education to inform all Headteachers and PTAs, so that those who show interest are applied. However, many

of the Headteacher do not usually apply due to the payment of 5% initial investment cost attached to the project.

There are limited resources available for the implementation of the policies in the school health, therefore put so many challenges and constraints.

On the food vendors, circulars are usually sent out to Headteachers to warn the pupils on dangers of some foods and candies' that are sold on schools' compound. For instance, a letter was released from Deputy Director General's Office on the retail of unregistered candies designed to look like cigarette, guns, torchlight's with real glass bulbs, jagers, etc. These products have the potential to promote social vices among their patrons' in school and can also cause injuries. Hospital reports made available to the Food and Drug Board (FDB) attest to the fact that a number of children have suffered various degrees of injuries. Steps should be taken by Heads of schools to instruct food vendors who sell on their schools' premises to desist from selling any such candies. Children should also be provided with health education on the dangers of patronizing such products. The SHEP Co-ordinators, circuit supervisors and other field officers should monitor the situation in schools (Biney, 2008) Deputy Director General, G.E.S/SHEP/G4/VOL.2/65.

Most of Head teachers do not show great concern towards the health care of the pupils due to lack of incentives and lack of funds and logistics for the SHEP Co-ordinator, especially the personal hygiene of pupils, good sanitary conditions of the urinal and toilet facilities in their schools; and also the activities of food vendors.

The PTAs for the various schools do not show much interest when it comes to contributions towards development products; since the inception of Capitation Grants.

The District SHEP Co-ordinator stressed the need for using buckets with taps beneath the bottom rather than communal washing bowls.

4.8.2. Tano South Distinct Assembly

The records from Water and Sanitation team leader, at the Tano South District Assembly showed that most of the schools lack water and sanitation facilities. About 60% of all schools in the district have no access to water facilities on schools compound; this was observed during my analysis.

There is package for provision of latrines to institutions in the District by the year 2009. The schools, PTA and the communities would be sensitized on the needs of showing interest and applying for the facilities so that the 5% initial investment cost that is paid by the community or the schools would not be setback for them, but rather to motivate or alert them to know that the facilities belong to them and therefore greater care should be taken for its operations and maintenance.

Other small towns would also be provided with boreholes when the 2009 project takes off so that many schools in small towns could be connected. The communities like Brosankro, Kwame Nsiahkrom, Akuradadaa, Biokrom and Kwasu are going to be benefited from the project. The funding for the project will still follow the old trend; District Assembly pays 5% Community – 5% and CWSA – 90%.

However, the Local Water Boards would not send the facilities to the schools unless the schools request for it and agrees to pay the 5% initial investment cost. But the communities which have ~~CWAS~~ water project already, the schools there can be commented when they agree to bear the cost from the Distribution Pipes Point Trench

(DPPT) to the school compound, or the cost of the provision of the DPPT together with the service line to the school, for instances where the DPPT is not available or used up. Once again the District Assembly will sensitize them about the need to have the facilities on schools compound, organize health talks and advise the communities to mobilize funds to be able to pay for the 5%, so that the school can apply for the facilities.

4.8.3 Community Water and Sanitation Agency (CWSA)

From the Regional Director and the Regional Engineer of Community Water and Sanitation (CWSA), the main roles that CWSA plays is to seek for funds and use the funds to provide water and sanitation facilities for communities which have applied for such facilities. This is done by considering some districts at a time. Some projects are design specific; in such cases one could not change the design. For instance the water supply to Derma which was founded by the World Bank had the design together with the project; and it had included the schools hence 5 out of 6 schools in Derma were connected, while that at the Bechem which was founded by EU had different design which did not include schools. However, the CWSA have started with uniform design for current projects in the Region, so that once the project is brought to the community the schools can also benefit. The CWSA helps the communities and District Assemblies to get consultants and contractors for the projects. After the project is completed it is handed over to the community for management. However, the CWSA monitor the operation and maintenance of the project to ensure sustainability. CWSA takes water to schools through standpipes, since every standpipe serves 300 people, the one with two holes can serves at least 600.

So far most of the projects that come into the region did not have sanitation component. Currently funds are been sought from French Agency for Development (FAD) for water and sanitation in the region. When the project comes to the region all the District Assemblies would be informed to apply; but the communities are served based on the one who applied first. So the schools in the communities that will be benefited from the project will also benefit for the water supply.

Some communities do not apply at all due to the 5% attached to the communal projects and 50% for household ones.

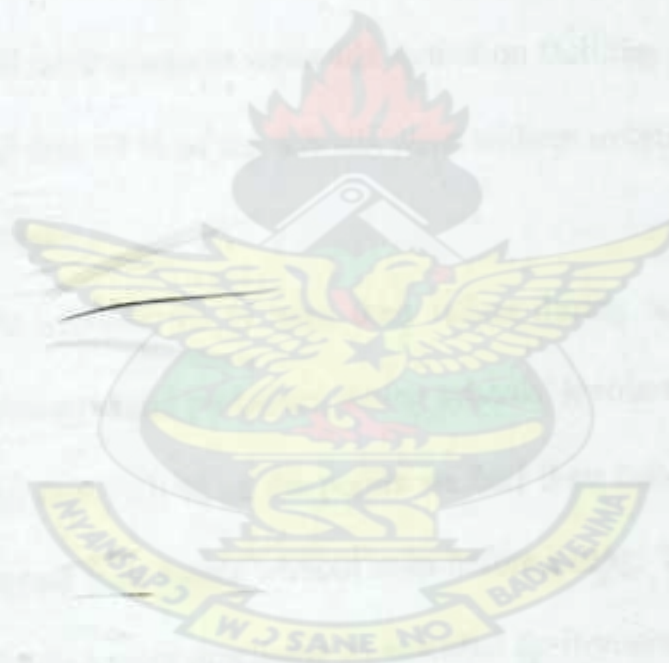
4.8.4 Parents Teachers Associations (P T A)

The Parent Teachers Associations at the basic levels are not vibrant so it is very difficult to get contributions from members for development projects. The P.T.A.s. have not considered provision of water facilities in the schools as priority but the toilet facilities are the major concern since funds are not available. About 20.0 %of the PTAs had provided the two seater KVIP and urinals to schools to minimize the problems, from the records of the PTAs in the District. However the design of the P. T.A. facilities in the schools did not meet standard. For instance, most of the urinals constructed by them did not have drains to allow the grey water to drain out.

The indicators used in this research work can be used to assess the facilities available in all schools in Ghana so that the schools could be categorized into A, B, C and D, based on the facilities available in every school; so that when resources are been shared for schools, those without the facilities would be considered first.

Again the work is also useful in hand washing with soap promotion programmes that would be organized in 2010 in Ghana to create more awareness and importance of hygiene behaviour and practices.

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5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

- The research has revealed that, the coverage of water and sanitation facilities in schools in the district were low. This was contrary to MOEYS/GES policy which requires that every school should have adequate water and sanitation facilities.
- The results showed that 53 % of the schools were without toilets facilities, while 83 % were without safe water.
- The majority of the schools, 71 % burn their refuse during schools' instructional hours, which causes environmental pollutions during schools' instructional hours.
- The survey revealed that 30.0 % of the pupils washed their hands with soap before eating while 70.0% washed their hands without soap before eating. This means that only 30.0 % of the school children were practicing an essential do-it-yourself vaccine which is the effective way of interrupting the transmission of disease agents and also significantly reduce diarrhoea and respiratory infections, as well as skin infections and trachoma.
- The least hygienic practice that was carried out in the district was hand washing after collection of wastes or refuse. The percentage of pupils who washed their hand with soap was 24.0% with 54.0% using only water to wash their hand. The remaining 22.0 % did not wash their hand after refuse collection.
- The food vendors in 10 out of 30 schools scored 20 points or less out of 40 points, which means that these vendors' behaviour and practices were unsatisfactory. These low scores were due to the wrong practices such as dishing of food and collection of money with the same hand due to ignorance and lack of education.

- The study revealed that 65.0 % of the SHEP co-ordinators were not performing their duties due to lack of funds, personnel and logistics. The strategies in the School Health Policy could be implemented very effectively if the needed resources, funds, personnel, logistics and incentives are provided by the G.E.S.

The indicators used in this research work can be used to assess the facilities available in all schools in Ghana so that the schools could be categorized into A, B, C and D, based on the facilities available in every school; so that when resources are been shared for schools, those without the facilities would be considered first.

5.2 Recommendations

- The School Management Committees, the PTAs and the communities must be sensitised on the need to support Government Policies with regards to school health policies.
- The stakeholders should provide adequate funds to support school health educational programmes to enable the District SHEP co-ordinator to be able to organise frequent training for SHEP co-ordinators in school, and also the food vendors.
- Headteachers and health teachers should be encouraged to take the personal hygiene of pupils into consideration and also maintain good sanitary conditions in their schools.
- The District environmental health officers should be contacted by the school Headteachers /PTAs for their expertise as to the sitting of school toilets, urinals, refuse dumps and vendors corner or canteen in schools to reduce odour nuisance and anaesthetics on schools' compound.

- The Headteachers should ensure that the food vendors would provide long tables and benches for pupils to use in all schools they sell to prevent pupils from squatting whenever they are eating.
- Incentives should be given to Headteachers and health teachers for the supervisory role they play in basic schools on health issues to motivate them to work effectively.
- The government should include the 5% initial investments costs for the provision of water and sanitation facilities in schools in the capitation grants so that all schools could be provided with the facilities when the project gets into the community.
- The Ghana Education Service Policies on school fees should permit the PTAs to collect a certain minimum dues/levies to support government efforts for the provision of water and sanitation facilities on school compounds.
- Proper hands washing facilities such as buckets with taps beneath bottom, towels/napkins should be provided to make pupils learn and practices proper hands washing in schools so that it would be extended to their homes to prevent or reduce worm infestation and other sanitation related diseases among school going children.
- The provision of toilet facilities in schools should be one of the government priorities when awarding contracts for building of blocks in any school without those facilities.

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APPENDICES

Appendix 1 Sample Questionnaires

Appendix 1A: Assessment Of Schools Sanitation In Tano South District (Pupils/ Students Questionnaire)

A General Data

Name of School:

1. Name:

Age: Class:

Sex: Academic Performance

2. Who do you stay with? Both parents ☐ father only ☐ Mother Only ☐ other , specify

3. Why? ☐

4. How much money do you spend at school everyday?

GH¢.20p ☐ GH¢.30p ☐ GH¢.50p ☐ GH¢1.00 ☐

Other specify

5. Where do you eat during school hours?

(a) On School Compound

(b) Outside the School

Compound

Why?

6. Do you usually fall sick during school hours? Yes ☐ No ☐

If yes what kind of sickness

7. How often do you fall sick?

8. How often do you attend health/hygiene programmes in the school?

Excreta Disposal

1. Is there a latrine in your school? Yes ☐ No. ☐
2. a. If No, Go to 3 If Yes which type?
 KVIP ☐ VIP ☐ Pit Latrine ☐
 Bucket Latrine ☐ Water closet ☐
- b. what is the condition? Poor ☐ Good ☐ very Good ☐
- c. How often is the place cleaned?
 Daily ☐ Every two days time ☐ Weekly ☐ When it is dirty ☐
 Other Specify.....
- d. How do they clean the place? Sweeping ☐ Scrubbing ☐
- e. Who clean the place? Pupils/Students ☐ Labourers ☐
- f. When do they clean the place? Morning ☐ School time ☐
 After School ☐
3. a. If No where do the pupils/students defecate?
 b. How far is it from the school?
 c. Do you pay for it/ Yes ☐ No ☐ If Yes
 d. How much do you pay for using the public toilet?
4. a. Which types of anal cleansing materials are used?
 b. Who supply them?

5. How do you dispose of the anal cleansing materials? Burning ☐
 Dump at refuse site ☐
 Dump in skip container/bin ☐ Dump into the bush ☐
6. How many people use the toilet (i.e average persons per hole?)

Water supply system

1. Do you have water supply system in your school? Yes ☐ No ☐
 If No where do you get water from?
2. Is water supply enough for pupils /students? Yes ☐ No. ☐
3. Which type? Bole hole ☐ Well ☐ standpipe ☐ rain harvest ☐
 Public Standpipe ☐ other Specify
4. What is the quality of the water supply?
5. How reliable is the source of water? Regular flow ☐
 Not regular ☐

Solid Waste Disposal

1. Does the school have solid waste facilities? Yes No
2. What are the types of waste that is generated on School Compound?
.....
3. How often do you clean the School Compound?
Daily ☐ Two Days ☐ When the Compound is dirty ☐
4. Does the school have latter bins/container?
Yes ☐ No. ☐
If no where do you dispose of your refuse?
.....
5. How far is the disposal site from the school.....
6. If yes which type? Dustbin with lid Dustbin without lid
Basket used as dustbin No dustbin
7. If yes how often do you empty your bin/container? Everyday.....
Everyday..... Every week
8. What type of disposal method do you use in your school? Burning
Burying Sorted & composting..... Recycling

2. Hand washing practices

1. Do you have knowledge about hand washing practices
3. Do you wash your hands after visiting the toilet? Yes ☐ No ☐
4. With what? Water only ☐ Water and soap ☐
Other (Specify).....
5. Why do you was your hands?
6. Do you wash your hands before eating? Yes ☐ No ☐
7. With what? Water only ☐ Water and soap ☐
Other (Specify).....
8. Why do you wash your hands?
9. Do you wash your hands after eating? Yes ☐ No. ☐

10. With what? Water only ☐ water and soap ☐
Other (Specify).....
11. Why do you wash your hands
12. Do you wash your hands after refuse collection? Yes ☐ No. ☐
13. With what? Water only ☐ Water and soap ☐
Other (Specify).....

Appendix 1B: Assessment Of Schools Sanitation In Tano South District (Vendors Questionnaire)

A General Data

1. Name of School: 2. Name of Vendor: Age:
Sex:
3. When do you sell on the school compound?
(a) During break time (b) During class hours
4. Why?
.....
5. Do you usually fall sick during school period? Yes ☐ No. ☐
What kind of sickness
.....
6. How often do you fail sick?
.....
7. How often do you attend medical checkup or screening?.....
8. Do you have the ID or the Certificate issued by the environmental Health Officers?

Water Supply System

6. Do you send water to the school for use ? Yes ☐ No ☐
If No. Where do you get water to use during school hours?.....

7. If Yes, Is water supply enough for vendors? Yes ☐ No ☐
8. Which type? Bole hole ☐ Well ☐ standpipe ☐
rain harvest ☐
Public Standpipe ☐ other Specify
9. What is the quality of the water supply?
10. How reliable is the source of water? Regular flow ☐
Not regular ☐

Solid Waste Disposal

1. What are the types of waste you generate on School Compound?
.....
2. How often do you clean the School Compound where you sell?
Daily ☐ Two Days ☐ When the Compound is dirty ☐
3. Do you have litter bins/container on the school compound where you sell?
Yes ☐ No. ☐
If no where do you dispose of your refuse?
.....
4. How far is the disposal site from the school.....
5. How often is the refuse removed from the dump site?
6. If yes which type? Dustbin with lid Dustbin without lid
Basket used as dustbin No dustbin
7. If yes how often do you empty your bin/container? Everyday.....
Everyday..... Every week

Hand washing practices

1. Do you wash you have soap in the school? Yes ☐ No ☐
2. Do you supply soap to school? Yes No
3. Do you wash your hands after visiting the toilet? Yes ☐ No ☐
4. With what? Water only ☐ Water and soap
Other (Specify).....
5. Do you wash your hands before eating? Yes ☐ No ☐
6. With what? Water only ☐ Water and soap ☐

Other (Specify)

7. Do you wash your hands before selling food? Yes ☐ No ☐
8. With what? Water only ☐ water and soap ☐

Other (Specify).....

9. Do you wash your hands after breast feeding? Yes ☐ No ☐
10. With what? Water only ☐ water and soap ☐
- other specify

Selling of food

1. Do you dish food with spoon / ladle ☐ With hand ☐
2. Do you collect money with right hand ☐ With left hand ☐
- 3 Do you wash your plates after every child has used it? Yes ☐ No ☐
4. Do you possess medical examination certificate? Yes ☐ No ☐



Appendix 2**Appendix 2A: Hygiene behaviour and practices of school children (Hand washing)**

	Name of School	Before Eating / weight		After Eating /weight		After Visiting Toilet/weight			After refuse collection/weight			Total Score
		A (5)	B (2)	A (5)	B (2)	A(5)	B(2)	C(0)	A (5)	B (2)	C (0)	
												100
1	Akobro Comm.	5	8	5	8	20	2	0	5	6	1	60
2	Bechem R/C JHS	10	6	20	2	25	0	0	20	2	0	85
3	Bechem ST. Joseph	15	4	15	4	10	6	0	10	2	0	66
4	Bechem S.D.A.	0	10	15	4	10	4	0	5	4	0	52
5	Bechem Presby	10	6	15	4	25	0	0	10	6	0	76
6	Bechem R/C Prim.	25	0	25	0	20	2	0	10	6	0	88
7	Bechem Meth. Prim.	15	4	10	6	10	6	0	0	8	0	59
8	Bechem Meth. J.H.S.	20	2	20	2	25	0	0	5	4	0	79
9	Girls Model J.H.S.	15	4	15	4	10	6	0	10	6	0	70
10	Breme J.H.S	10	6	10	6	15	4	0	10	4	0	65
11	Brosankro Comm.	10	6	15	4	10	4	0	5	4	0	64
12	Brosankro R/C	5	8	5	8	15	2	0	5	6	0	54

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13	Dwomo R/C Prim.	0	10	10	6	15	2	0	0	8	0	51
14	Dwomo Comm.	5	8	10	6	0	6	0	0	8	0	42
15	Dwomo Meth.	10	6	20	2	5	6	0	0	6	0	55
16	Derma S.D.A	0	10	5	8	5	4	0	5	4	0	41
17	Derma R/C	10	6	20	2	25	0	0	15	4	0	72
18	Derma Islamic	10	6	5	8	20	2	0	10	6	0	67
19	Derma Presby	0	10	5	8	10	6	0	0	10	0	49
20	Derma Comm.	5	8	10	6	25	0	0	0	8	0	62
21	Derma Meth.	0	10	10	6	15	2	0	0	6	0	49
22	Holy Trinity	5	8	0	10	15	0	0	5	2	0	45
23	Titia Islamic	5	8	5	8	20	2	0	5	6	0	58
24	Titia Comm.	0	10	20	2	25	0	0	5	6	0	67
25	Titia Meth. Prim.	5	8	0	10	10	4	0	15	2	0	52
26	Titia Meth J. H. S.	5	8	10	6	25	0	0	5	6	0	65
27	Titia Presby J.H.S	0	10	0	10	0	8	0	0	6	0	34
28	Titia St. Joseph	5	8	10	6	25	0	0	5	6	0	65
29	Titia Presby Prim.	10	6	5	8	10	6	0	5	6	0	56
30	Titia Hope Prep.	10	6	15	4	15	4	0	10	4	0	69
	%	30.0	70.0	44.0	56.0	61.3	29.3	9.3	24.0	54.0	22.0	

Notes:

1. The number of respondents in each school was five (5).
2. 'A' is the number of pupils who washed their hands with soap and it was weighted 5 points per person
3. 'B' is the number of pupils who washed their hands without soap and it was weighted 2 points per person.
4. 'C' is the number of persons who did not wash their hands and it was weighted zero(0).
5. the rating = number of respondents * weight per person
6. For example:
 - a. the rating for Akobro Community for hands with soap before eating $1 * 5 = 5$ points
 - b. the rating for Akobro Community for hands without soap before eating $4 * 2 = 8$ points

Appendix 2B: Solid waste collection facilities and disposal methods.

Name of School	Types bin or pan used for Collection/weight					Method of Disposal /weight			Total score
	D (5)	E (4)	F (3)	G (0)	H (3)	I (4)	J (5)	10	
1 Akobro Comm.	0	0	3	0	0	4	0	7	
2 Bechem R/C J.H.S	0	4	0	0	3	0	0	7	
3 Bechem ST. Joseph	0	0	0	0	3	0	0	3	
4 Bechem S.D.A.	0	0	0	0	3	0	0	3	
5 Bechem Presby	0	0	3	0	3	0	0	6	
6 Bechem R/C Prim.	5	0	0	0	3	0	0	8	
7 Bechem Meth. Prim.	5	0	0	0	3	0	0	8	
8 Bechem Meth. J.H.S.	0	0	0	0	3	0	0	3	
9 Girls Model J.H.S.	0	4	0	0	3	0	0	7	
10 Breme J.H.S	5	0	0	0	3	0	0	8	
11 Brosankro Comm.	0	4	0	0	0	4	0	8	
12 Brosankro R/C	0	0	3	0	3	0	0	6	
13 Dwomo	0	0	0	0	3	0	0	3	

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	R/C Prim.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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30	Titia Hope	5	0	0	0	3	0	8
	Prep.							
	%	18.0	22.7	12.0	47.3	81.0	19.0	0

Notes:

1. The number of respondents in each school was five (5).
2. 'D' is the number of pupils who had dustbin with lid and it was weighted 5 points for all
3. 'E' is the number of pupils who had dustbin without lid and it was weighted 4 points for all
4. 'F' is the number of persons who used basket as dustbin and it was weighted 3 points for all
5. 'G' is the number of persons who had neither dustbin nor basket as dustbin and it was weighted zero (0).
6. 'H' is the responds for burying of refuse and it was weighted 4 points for all
7. 'I' is the responds for burning of refuse and it was weighted 3 points for all
8. 'J' is the responds for re-use of refuse and it was weighted 5 points for all
11. For example, the rating for Akobro Community for using basket as bin is 3 points

Appendix 2C: Hygiene Behaviour And Practices Of Food Vendors On The Schools' Compound

	Name of School	Dishing of food with		Collection of money with		Medical Exams		Washing of plates		Total score
		Q (5)	R (0)	S (5)	T (0)	U (5)	V (0)	W (5)	X (3)	
1	Akopro Comm.	5	0	0	0	10	0	10	0	25
2	Bechem R/C J.H.S	10	0	0	0	10	0	5	3	28
3	Bechem ST. Joseph	10	0	0	0	10	0	10	0	34
4	Bechem S.D.A.	5	0	5	0	10	0	10	0	30
5	Bechem Presby	5	0	5	0	10	0	10	0	30
6	Bechem R/C Prim.	10	0	0	0	10	0	10	0	30
7	Bechem Meth. Prim.	10	0	0	0	10	0	5	0	25
8	Bechem Meth. J.H.S.	5	0	0	0	10	0	5	0	23
9	Girls Model J.H.S.	5	0	0	0	10	0	5	0	20
10	Breme J.H.S	5	0	0	0	10	0	10	0	25
11	Brosankro Comm.	10	0	5	0	10	0	10	0	35
12	Brosankro R/C	5	0	5	0	10	0	5	0	28
13	Dwomo R/C Prim.	5	0	0	0	10	0	5	0	20
14	Dwomo Comm.	10	0	0	0	10	0	5	0	25
15	Dwomo Meth.	10	0	0	0	10	0	5	0	25
16	Derma S.D.A	10	0	0	0	10	0	5	0	25
17	Derma R/C	0	0	5	0	10	0	5	0	20

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18	Derna Islamic	0	0	5	0	10	0	5	0	20
19	Derna Presby	5	0	5	0	10	0	10	0	30
20	Derna Comm.	5	0	0	0	10	0	5	0	20
21	Derna Meth.	5	0	0	0	10	0	10	0	23
22	Holy Trinity	10	0	5	0	10	0	10	0	35
23	Titia Islamic	0	0	0	0	10	0	10	0	20
24	Titia Comm.	0	0	0	0	10	0	5	0	15
25	Titia Meth. Prim.	5	0	5	0	10	0	5	0	20
26	Titia Meth J. H. S.	10	0	5	0	10	0	10	0	30
27	Titia Presby J.H.S	5	0	10	0	10	0	5	0	30
28	Titia St. Joseph	0	0	0	0	10	0	10	0	20
29	Titia Presby Prim.	0	0	0	0	10	0	10	0	20
30	Titia Hope Prep.	0	0	5	0	10	0	10	0	25
	%	55.7	43.3	21.7	78.3	100	0	75.00	25	

Notes:

1. The number of respondents in each school was two (2).
2. 'Q' is the number of vendors who dished food with spoon / ladle and it was weighted 5 points per person
3. 'R' is the number of vendors who did not dish food with spoon / ladle and it was weighted 3 points per person.
4. 'S' is the number of vendors who collect money with left hand and it was weighted 5 points per person.
5. 'T' is the number of vendors who collect money with right hand and it was weighted 3 points per person.
6. 'U' is the number of vendors who had medical examination certificate and it was weighted 5 points per person
7. 'V' is the number of vendors who had medical examination certificate and it was weighted zero (0).
8. 'W' is the number of vendors who washed their plates after used by every child and it was weighted 5 points
9. 'X' is the number of vendors who washed their plates after used by many children and it was weighted 3

Appendix 2D: AVAILABILITY OF HUMAN EXCRETA FACILITIES

	Name of School	Toilet facility				Urinal facility				Total score
		W C (5)	KVIP/ VIP (4)	Pit latrine (2)	None (0)	Boys (5)	Girls (5)	None (0)		
									15	
1	Akopro Comm.	0	4	0	0	3	3	0	10	
2	Bechem R/C J.H.S	0	0	0	0	3	3	0	6	
3	Bechme ST. Joseph	0	0	0	0	3	3	0	6	
4	Bechem S.D.A.	0	0	2	0	5	5	0	12	
5	Bechem Presby	0	2	0	0	5	5	0	12	
6	Bechem R/C Prim.	0	4	0	0	3	3	0	10	
7	Bechem Meth. Prim.	0	4	0	0	5	5	0	14	
8	Bechem Meth. J.H.S.	0	0	0	0	5	5	0	10	
9	Girls Model J.H.S.	0	0	0	0	3	3	0	6	
10	Breme J.H.S	0	0	0	0	3	3	0	6	
11	Brosankro Comm.	0	0	0	0	3	3	0	6	
12	Brosankro R/C	0	0	0	0	3	3	0	6	
13	Dwomo R/C Prim.	0	0	0	0	3	3	0	6	
14	Dwomo Comm.	0	4	0	0	0	0	0	4	
15	Dwomo Meth.	0	0	0	0	3	3	0	6	
16	Derma S.D.A	0	0	0	0	5	5	0	10	

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17	Derma R/C	0	4	0	0	3	3	0	10
18	Derma Islamic	0	4	0	0	5	5	0	14
19	Derma Presby	0	0	2	0	3	3	0	8
20	Derma Comm.	0	0	0	0	3	3	0	6
21	Derma Meth.	0	0	0	0	5	5	0	10
22	Holy Trinity	0	4	0	0	5	5	0	14
23	Tiita Islamic	0	2	0	0	5	5	0	12
24	Tiita Comm.	0	2	0	0	3	3	0	8
25	Tiita Meth. Prim.	0	0	2	0	3	3	0	8
26	Tiita Meth J. H. S.	0	0	0	0	3	3	0	6
27	Tiita Presby J.H.S	0	0	0	0	3	3	0	6
28	Tiita St. Joseph	0	0	0	0	5	5	0	10
29	Tiita Presby Prim.	0	4	0	0	3	3	0	10
30	Tiita Hope Prep.	0	0	0	0	3	3	0	6
	%	0.0	33.4	13.3	53.3	96.7	96.7	3.3	

APPENDIX E. A VALUABLE AND WASTED OPPORTUNITY

[illegible]

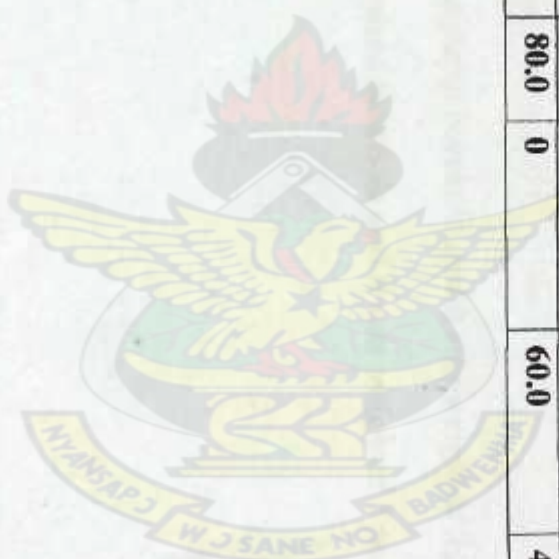
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[illegible]

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29	Titia Presby	0	0	0	0	2	0	0	2
	Prim.								
30	Titia Hope	0	0	0	0	2		5	0
	Prep.								7
	%	3.3	13.4	3.3	80.0	0	60.0	40.0	26.6
									73.4

KNUST



Notes:

1. *Field visits were made to each school and the following infrastructure / facilities were observed.*
2. *The number of respondents in each school was two (5).*
3. *'Y' is the number of pupils who had hand pump borehole and it was weighted 5 points for all*
4. *'Z' is the number of pupils who had mechanised borehole and it was weighted 5 points for all.*

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Name of schools	Supervision of sanitation					Supervision of activities of food vendors		Provision of good drinking water and sanitation	
	Cleanliness of school					Vendors activities			
	A(3)	B(3)	C(3)	D(3)	E(3)	F(3)	G(3)	H(3)	I(3)
Bechem R/C J.H.S	2	0	2	2	0	1	1	3	1
Bechem St. Joseph	2	0	1	2	1	1	1	3	0
Bechem S.D.A.	2	0	1	1	0	2	2	3	1
Bechem Presby	3	0	3	1	0	1	1	3	1
Bechem R/C Prim.	2	2	1	1	2	1	2	2	1
Bechem Meth. Prim.	1	2	2	1	1	2	2	2	1
Bechem Meth. J.H.S.	2	0	2	2	0	2	1	2	1
Girls Model J.H.S.	2	0	1	1	0	1	1	0	1
Breme J.H.S	2	1	1	2	0	1	1	0	0
Brosankro Comm.	2	1	2	1	0	2	1	2	1
Brosankro R/C	2	0	2	1	1	1	2	2	1
Dwomo R/C Prim.	2	0	1	1	0	2	2	0	1
Dwomo Comm.	2	2	0	0	0	1	1	0	1
Dwomo Meth.	1	0	1	2	0	1	1	0	1
Derma S.D.A	1	0	1	1	0	1	2	3	2
Derma R/C	1	1	1	1	0	2	1	3	2
Derma Islamic	2	2	2	1	1	1	2	3	2
Derma Presby	2	1	1	1	0	2	1	3	1
Derma Comm.	1	0	1	1	0	2	1	3	1
Derma Meth.	2	0	2	2	0	1	2	3	2
Holy Trinity	2	2	2	1	1	2	2	3	3
Titia Islamic	1	1	2	1	0	1	2	3	1
Titia Comm.	2	0	2	1	0	1	1	0	0
Titia Meth. Prim.	2	3	2	2	2	2	2	3	2
Titia Meth J. H. S.	2	0	1	2	0	1	0	0	1

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Titia Presby J.H.S	2	0	1	1	0	2	0	0	0
Titia St. Joseph	2	1	1	1	0	1	1	3	1
Titia Presby Prim.	3	1	2	1	1	1	1	3	1
Titia Hope Prep.	2	1	1	2	1	2	2	3	1
Akopro Comm.	2	2	1	1	0	2	2	3	1
Total	58	23	43	38	11	43	45	60	33
%	64.4	25.6	47.8	42.2	12.2	47.7	50.0	66.7	36.7
Average (%)	38.4			48.9			51.7		

Note: A: Toilet, B: Urinal, C: Refuse site, D: Canteen, E: Washing bowls, F: Frequency of inspection, G: Frequency of meeting, H: Quality of water supply, I: Quantity of water supply

Name of schools	To ensure proper hand refuse disposal site		Provision of proper hand washing facilities	Health education programmes
	More than 50m (3)	Less than 50m (1)	Facility provision (3)	Frequency of health education programmes (2)
Bechem R/C J.H.S	3	0	0	1
Bechem St. Joseph	3	0	0	0
Bechem S.D.A.	0	1	0	1
Bechem Presby	3	0	0	1
Bechem R/C Prim.	3	0	2	1
Bechem Meth. Prim.	0	1	2	1
Bechem Meth. J.H.S.	3	0	0	1
Girls Model J.H.S.	0	1	0	1
Breme J.H.S	3	0	0	0
Brosankro Comm.	3	0	2	1
Brosankro R/C	3	0	0	1

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Dwomo R/C Prim.	3	0	0	1
Dwomo Comm.	0	1	0	1
Dwomo Meth.	0	1	0	1
Derna S.D.A	3	0	0	1
Derna R/C	0	1	0	1
Derna Islamic	0	1	2	1
Derna Presby	0	1	0	1
Derna Comm.	0	0	0	1
Derna Meth.	3	0	1	1
Holy Trinity	3	0	2	1
Titia Islamic	0	1	1	0
Titia Comm.	3	0	0	1
Titia Meth. Prim.	3	0	2	1
Titia Meth J. H. S.	3	0	0	1
Titia Presby J.H.S	3	0	0	1
Titia St. Joseph	0	1	1	1
Titia Presby Prim.	0	1	1	1
Titia Hope Prep.	3	0	1	1
Akobre Comm.	3	0	1	1
Total	54	36	18	27
%	60.0	40.0	20.0	45.0
Average (%)				

Appendix 3

Appendix 3A: Percentages of school children who wash their hands with soap and without soap

Indicator	Wash With Soap (%)	Wash without soap (%)	No washing (%)
Hands washing before eating	30.0	70.0	Nil
Hands washing after eating	44.0	56.0	Nil
Hands washing after visiting toilet	61.3	29.3	9.4
Hands washing after waste / refuse collection	24.0	54.0	22.0

Appendix3B: Percentages of school children and type of bins / pans used for collection of waste.

	Dustbin with lid	Dustbin without lid	Basket	No bin or basket
Type of bin / pan				
%	18.0	22.7	12.0	47.3
How refuse was collected	Collection of refuse with dustpans / basket	Collection of refuse with hands		
%	88.4	11.6		
Method of treatment	Burning	Burying	Re-use	
%	71.3	28.7	0	

Appendix 3C: percentages of food vendors and their hygiene behaviour and practices

Dishing of food	With spoon	With hand
%	56.7	43.3
Collection of money	With different hand	With the same hand for dishing of food
%	21.7	78.3
Hands washing after visiting toilet	With soap	Without soap
%	100.0	0
Hands washing after urinating	With soap	Without soap
%	96.0	4.0
Hands washing after breastfeeding	With soap	Without soap
%	73.4	26.6
Medical examination	With certificate	Without certificate

%	100	0
Washing of plates .	after used by every child	after used by many children
%	75.0	25.0

Appendix 3.D: Availabilities of water and sanitation facilities in schools (%)

Toilet facilities	(%)	Water facilities	(%)
KVIP / VIP Two seater	16.7	Borehole with hand pump	3.3
KVIP / VIP Six seater	16.7	Mechanised borehole	13.4
Pit Latrine	13.3	Rain harvest tank	3.3
None	53.3	None	80.0
Hands washing facilities	(%)	Urinal facilities	(%)
Veronica bucket	0	Urinal with drains	16.7
Rubber basin	60.0	Urinal without drains	70.0
None	40.0	None	3.3