UNIVERSITY OF GHANA

COLLEGE OF BASIC AND APPLIED SCIENCE (CBAS)

ASSESSMENT OF WATER, SANITATION AND HYGIENE (WaSH) IN BASIC SCHOOLS: CASE STUDY LEDZOKUKU MUNICIPALITY, GHANA

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MARILYN AMA ADOMA CHRISTIAN

INSTITUTE FOR ENVIRONMENT AND SANITATION STUDIES (IESS)

DECEMBER, 2021

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BY

MARILYN AMA ADOMA CHRISTIAN

(10525418)

A THESIS SUBMITTED TO THE UNIVERSITY OF GHANA IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL ENVIRONMENTAL SANITATION DEGREE.

INSTITUTE FOR ENVIRONMENT AND SANITATION STUDIES (IESS)

DECEMBER, 2021

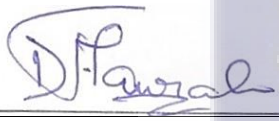
DECLARATION

I declare that this thesis submitted to the University of Ghana except for the references have been duly acknowledged in an original work carried out by me under the supervision of Dr. Yirenya Tawiah, and Dr. Ted Yemoh Annang and Dr. Jesse Ayivor. I confirm that the result presented in the study has not been submitted to any other University or institute for the award of any degree.

7/12/2021

MARILYN AMA ADOMA CHRISTIAN — DATE

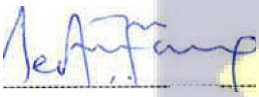
STUDENT



4th DEC; 2021

DR. DZIDZO YIREYA-TAWIAH — DATE

(PRINCIPAL SUPERVISOR)



14th DEC. 2021

DR. TED YEMOH ANNANG

DATE

(CO- SUPERVISOR)

DR. JESSE AYIVOR — DATE

(CO- SUPERVISOR)

DEDICATION

I dedicate this work to my Heavenly father, my family, especially to my beloved parents who have unconditionally supported my academic pursuits and my sibling who in one way or another helped me sail through. Finally, to the cause of ensuring Water and Sanitation for all.

ACKNOWLEDGEMENT

I am thankful to Mr. and Mrs. Christian for funding my research and thankful to Dr. Yirenya-Tawiah and Dr. Ted Annang, and Dr. Ayivor as my supervisors whose valuable inputs have added worth to my study. To my brother Dr. Aaron Christian who helped me find a sense of direction when completing my research. I am also very thankful to the Director and staff of the Ghana education service secretariate of Ledzokuku municipality through whose support data collection for my work was facilitated. I am very grateful to the director and IESS staffs for the knowledge and contribution to the successful completion of my degree. I am equally thankful to other individuals who assisted in spurring me on to finish my research, such as Mr. Mensah and my siblings and friends. I am grateful to all the schools that provided me with the needed data and to the individuals that assisted in the data collection in the field.

LIST OF ABBREVIATION AND ACRONYMS

COVID-19 - Corona Virus Disease-2019

ECBAS - Ethics Committee for Basic and Applied Sciences

F4W – Football For WASH

GRWP 1 - Ghana Rural Water Project

GES - Ghana Education Service

GAMA- Greater Accra Metropolitan Assembly

GIFTS - Girls' Iron – Folic Acid Tablets Supplementation

KG – Kindergarten

JHS - Junior High School

JMP- Joint Monitoring Programme

MDG's - Millennium Development Goals

MoE - Ministry of Education

PA - Parents Association

SAP - School Assessment Plan

SHEP - School Health Education Programme

SIP - School Improvement Plan

SDG's – Sustainable Development Goals

SMC – school management committee

SWP - Sanitation and Water Project

WaSH – Water Sanitation and Hygiene

WC – Water Closet

WHO – World Health Organisation

WinS – WaSH in Schools

UNESCO - United Nations Educational, Scientific and Cultural Organization

UNICEF- United Nations Children's Fund

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ABTRACT

Water, sanitation, and hygiene are necessary for the wellbeing of man. The importance of WaSH is demonstrated by the daily need of humans for good water sanitation and hygiene or the levels of morbidity and mortality caused by the inadequacy of water sanitation and hygiene in meeting the daily needs of humans, especially children. Children are known to spend the majority of their day in school and are known to be vulnerable to poverty, so it is prudent to assess and evaluate the WaSH situations in school, especially due to the significant amount of intervention in WaSH in school. This study assessed the WaSH in basic schools in the Ledzokuku Municipality using a descriptive cross-sectional survey approach. A simple random sampling technique was used to sample 14 basic schools out of 19, after which semi-structured questionnaires were administered to the heads of schools or their representatives. An observational checklist was also used to collect data, which was analysed using Excel 2017. The results showed that 86% of schools had received WaSH interventions, 92% had toilets, but only 86% had improved toilets. Urinals were found to be present in all schools, although the types and states varied. Hygiene promotion was visible in all schools. The main hindering factors for adhering to WinS standards were funds and poor-quality handwashing vessels, while the enabling factors were COVID-19 and WaSH assessment. Over all, the adherence to the WinS module for Ghana is low in the municipality; more efforts are needed to ensure 100% adherence to the WaSH guildlines.

CHAPTER 1
INTRODUCTION

1.1 Background

This chapter focuses on the background of the study, the problem statement, the justification, the relevance of the study, research questions, the research objectives, key definitions, the conceptual framework, and the structure of this thesis.

Water, sanitation, and hygiene (WaSH) are terms that constantly pop up when discussing issues related to the health, wellbeing, and environment of man. It is safe to say that the wellbeing of man and safe drinking water, sanitation, and hygiene are related. The importance of human wellbeing and its relationship with WASH is demonstrated by the daily need of humans for good water, sanitation, and hygiene or the consequences thereof of the inadequacy of good water, sanitation, and hygiene in meeting the daily needs of humans.

Ezbakhe et al., (2019) states that the quest to achieve equitable access to water, sanitation, and hygiene (WaSH) services requires that special attention be given to the vulnerable population. One of these groups happens to be children. A review of literature indicates the grave impact the consequences of inadequate WASH have on children (WaterAid, 2015; Yola, 2018; UNICEF, 2021b) especially those from developing or low- income countries (OECD, 2019). Numerous studies show that the physical environment and its state influence a child's well-being and development (Christian et al., 2015). Equally important is that children spend more time in schools than in any other place except at home (Bluyssen, 2017). It is for this reason that water sanitation and hygiene, especially in schools, need to be critically examined to achieve the best result.

Water sanitation and hygiene refers to two aspects, i.e., **safety** and **adequacy** to meet the needs of the environment concerned; in this case, basic schools. In terms of safety, it refers to the provision of safe water for drinking, washing, domestic chores (Sarkingobir et al., 2019) hand Washing(McMichael, 2019) and the facilitations that enable the safe removal of waste and promote hygiene. In terms of adequacy, it refers to having reliable water and sanitation and hygiene systems that meet the needs of the school, such as reliable water systems, sufficient toilets that are safe, private, hygienic, cultural, gender and age appropriate, as well as disability-friendly (McMichael, 2019)

WaSH in School (WinS) is critical to health and education. For one, safe drinking water, sanitation, and education are human rights issues which are evident in many international agreements such as the Millenium Development Goals (MDG's – 2,) and Sustainable Development Goals (SDG's – 4 & 6). The whole essence of a right lies in how crucial it is to human survival and in the promotion of human dignity and equal worth.

Secondly, the provision of safe drinking water, sanitation, and hygiene in schools has been known to improve health and boost educational (Antwi-Agyei et al., 2017; Olukanni, 2013). UNICEF, (2021) Inadequate WaSH impacts, children in many ways, including health and nutrition. It is said that globally, more than half a million children die every year from diarrheal diseases (Julian, 2016) linked to unsafe water, sanitation, and poor hygiene (Bitew et al., 2018) and nutrition-related factors, stunting their physical and mental growth by preventing them from getting the needed nutrients, education, development, and safety, as well as their livelihoods and futures (UNICEF, 2021a). The whole essence of educating a child is to impact knowledge and give the child a chance to use that knowledge to develop themselves and others. This cannot be achieved if the child is not healthy or

safe, and this could further jeopardise their livelihoods and the future of the children.

Over the years, there have been many attempts by individuals, organizations, and countries to meet the WaSH needs of schools. However, challenges such as poor government oversight and inadequate funding that provide a conducive environment for the proper functioning and sustainability of efforts have been lacking. In the case of Ghana, there are many policies or legal frameworks that have over the years been implemented in the WaSH sector. However, they have been widely underfunded and irregularly carried out. Also, individuals and organisations that execute projects run the risk of not getting the most out of the intervention. In most cases, when funding is provided, it only covers the initial cost of infrastructure and not the cost of operation, maintenance, and monitoring and evaluation. Again, the problem of a lack of clearly spelt out roles and responsibilities leave a gap in the chances of sustainability through maintenance, monitoring, and evaluation.

Furthermore, WaSH interventions have to overcome the hurdle of institutional acceptance; a case where the receivers of the intervention accept, use and maintain the facility or program designed to meet their needs. In some cases, training needs to be done, incentives provided and stakeholder consultations need to be done prior to the implementation of the interventions.

From time-to-time monitoring and evaluation will need to be carried out to monitor progress and necessary adjustments done. One thing likely to be addresses aside sustainability is efficient use of resources. It is prudent to address Wash in Schools to reduce disease transmission and improving the changes of a better future for the children.

In Ghana, the Ghana Education Service (GES) of the Ministry of Education (MoE) is responsible for the implementation and approving pre-tertiary policies and programs. WinS primarily fall under GES. This is why the School Health Education Programme (SHEP) Policy and Strategy was created in 2010 to address some difficulties in coordinating and harmonising WinS activities, particularly due to the project-based approach, donor-financed approach, and sometimes little to no participation from GES(GES, 2014). In order to provide leadership and direction for the implementation of WinS, the National Standards for WinS and its Implementation Models was developed. This action was done in partnership with UNICEF.

Again, WinS is listed under Policy Objective in the Ministry of Education's Education (MoE) Strategic Plan (ESP) 2010-2020. The goal was to strengthen and expand the school's safety, sanitation, and health systems (GES, 2014). By 2015, this goal aimed to ensure that all basic education schools (100%) have hygiene and sanitation systems and that 75 (percent) of schools had access to potable water (GES, 2014). Thus, the purpose of this study was to evaluate the policy objective's progress, the condition of the current facilities, and their utilisation, particularly in various schools.

1.2 Problem statement and justification

The circumstances for water sanitation and hygiene in Ghana's basic schools has improved, but there are still numerous challenges being faced in this regard (Appiah-Brempong et al., 2018; McMichael, 2019; Mensah et al., 2022; Tiswin, 2019). It is impossible to overstate the he impact of water sanitation and hygiene on children. In the world, children (0–15) make up the biggest percentage of the population (26% in Africa)(Szmigiera, 2021). It turns out that attending school is among the qualities these kids share in common. Children spend a large portion of their time in school and studies have shown that the physical environment has a role to play in the wellbeing of children,(Ezbakhe et al., 2019) specifically their health and survival, development, quality of education, and school attendance. Hence, the physical environment of the school is critical to the wellbeing of children. School buildings and grounds must therefore be designed and maintained to be accessible, free of health and safety hazards, and to promote learning and school engagement. It should cover food protection, sanitation, safe water supply, sanitation and hygiene, healthy air quality, good lighting, safe playgrounds, and emergency evacuation. According to research, while people of all ages can be negatively impacted by poor water, sanitation, and hygiene (WaSH), children's health is particularly at risk (Appiah-Brempong et al., 2018; Mulyaningsih et al., 2021; Sangalang et al., 2021).

Over the years, the focus of water, sanitation, and hygiene programmes, policy, and research has been focused on people's needs at home. However, generally speaking, people tend to spend more time at work or school. For this reason, there is a need to understand the importance of WaSH infrastructure in institutions, especially schools and health facilities(Chatterley; et al., 2018). School WaSH could impact school attendance in a number of ways. For example, good WaSH conditions and practises could lead to a reduction in the number of infections among children, which will then improve school attendance and active participation in school. Again, girls are less likely to miss school during their periods if the school

provides the necessary facilities to meet their menstrual needs, while children with disabilities will be encouraged to come to school because the school meets their water, sanitation, and hygiene needs. According to Headey & Palloni (2019) stated that there has been an increase in interest worldwide in the health benefits of improved water, sanitation, and hygiene (WaSH) over the previous ten years (Headey & Palloni, 2019)with nearly 2 billion people now having access to better water and/or sanitation. Great progress has been made in meeting the WaSH goal and targets of the Millennium Development Goals (MDGs). However, a sizeable portion of people (about 700 million) still do not have access to better water, and roughly 2.5 billion people do not use improved sanitation facilities, of which 1 billion still defecate in the open. WaSH targets to be attained by 2030 are covered under Sustainable Development Goal 6 (SDG6) as well. Assuring everyone has access to a sufficient and safe water supply is the aim of this goal. The "All" group mentioned in the targets includes the study's target population of children. Children are especially vulnerable to the effects of poor and insufficient WaSH, therefore failing to ensure that they have these circumstances, would result in a decrease in their wellbeing as well as a failure to reach the MDGs and SDGs.

According to Mooijman et al., (2013), there have been several WaSH in Schools (WinS) interventions in Ghana, but these have been delivered as part of traditional water, sanitation, and hygiene promotion projects in communities (Mooijman et al., 2013). In 2010, "56% percent of schools (Creche/Nursery, Kindergarten, Primary Schools, and Junior High Schools) had toilet facilities and 49% had access to water on site," according to the Wins implementation model document(GES, 2014). The numbers do not reflect the state and usage of the facilities, and since 2010, numerous additional school WaSH facilities have been built. As a result, there is no reliable information on functional water and Sanitatin and Hygiene systems in schools. In an attempt to improve WaSH situation, it was discovered that the Ghana Education Service (GES) of the Ministry of Education (MoE) had some challenges in coordinating and harmonising WinS interventions, mainly due to this project- based approach, which made it challenging for GES to

provide meaningful inputs or contributions. This prompted several interventions using wide range of guidelines and tactics from donors and stakeholders. To remedy this, a clear policy and programming guidance from the GES on the implementation of WinS in the country was needed. Leading to the creation of the Ghana Education Service National Standards for WinS infrastructure and Implementation Model (GES, 2014).

There are existing data gaps on WaSH in schools in Ghana (WHO/UNICEF, 2018), as well as the level of adherence since the implementation of the National Standards for WinS implementation in basic schools. Deroo et al., (2015) indicate massive efforts to scale up school WaSH programmes and interventions are lagging (Deroo et al., 2015). Between 2014 and now, the Ledzokuku Municipal Assembly worked hard to meet its hundred percent coverage of WaSH facilities in schools' target by securing funding for numerous WaSH interventions across the various schools. It is therefore prudent to conduct research to learn about the current state of WaSH, the outcomes of these interventions, and the challenges associated with adhering to the WinS module developed by GES.

1.3 General Objective

The objective of this study was to assess WaSH in basic schools in the Ledzokuku Municipality in a national and global context.

1.3.1 Specific objectives

The specific objective of this study was to:

A. Explore the current state of WaSH in basic schools in the municipality. In terms of types, availability, utilization, and interventions received,
B. Ascertain the extent to which basic schools in the municipality are adhering to the National WinS Implementation Module guidelines by the GES.
C. Identify challenges to adherence to the National WinS Implementation Model in the schools in the municipality.

1.4 Research questions

The research questions sought to be answered include:

1. What is the current state of WaSH services in basic schools in the municipality?
2. To what extent are basic schools adhering to the WinS Module guidelines by the GES?
3. What factors hindered or promoted the adherence to the WinS Modules?

1.5 Conceptual Frame Work

The conceptual framework explains that poor WASH has a negative impact on the wellbeing of children, particularly those in schools and on their academic performance. Many interventions have been made to improve the WASH situation in LeKMA but have had minimal results due to the varied standards and strategies of the donors. The WaSH National Implementation Model serves as a guide to standardised interventions and increase sustainability of interventions. The level of adherence to the guide, will determine the level of improvement in WASH that will be seen. Which will in turn impact the Wellbeing of children and related matters.

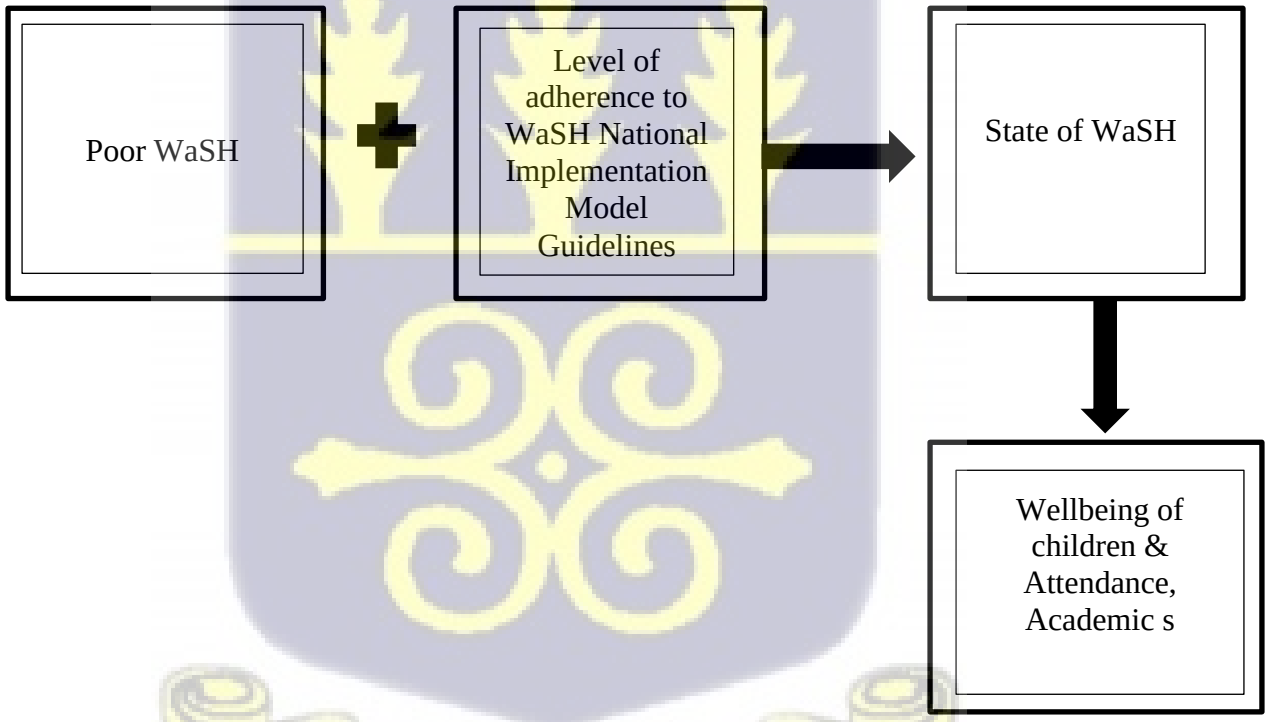


Figure 1: showing the conceptual framework for the study

1.6 Relevance of the study

For so long, one of the greatest challenges facing developing countries has been poor or inadequate water sanitation and hygiene, especially since these are things related to the everyday activities of man. Furthermore, man's wellbeing is hinged on these factors. Over the years, numerous efforts and funds have been made and invested in to help overcome the challenges of water, sanitation and hygiene, not just by governments of Ghana or individuals but by international organisations such as UNICEF, Plan Ghana, Care International, World Vision, WaterAid, and other organisations, Danida, United State Agency for International Development (USAID), the World Bank, and some NGOs. Again, it has been seven years since the implementation of national standards for the WinS in Ghana.

An assessment of the efforts invested and the success of the outcomes or the dynamics at work is necessary to make corrections to existing efforts or provide more information to improve the efficiency of future intervention, while ensuring that investments have not gone to waste.

This study is therefore relevant in the following ways:

1. The study will assess the progress of WASH in Schools implementation in the Municipality of Ledzokuku.
2. The study will emphasise the significance of water, sanitation, and hygiene facilities in schools in providing a safe environment for children to improve their academic potential, well-being, and overall development.
3. This study takes place in an urban municipality in Ghana that has received multiple interventions since 2014. Hence, the study will bring to light challenges or promoting

factors that facilitate adherence to the WinS implementation module and whether the interventions have improved the WaSH situation in schools.

4. The study will also provide useful information to the Ghana Education Service and its sector development partners in order to plan and improve water, sanitation, and hygiene facilities and standards in schools.

1.7 Definition of key concepts to the study

***Physical disability*:** makes reference to a situation where a child, for one reason or another, is limited in physical movement or function.

Disability-friendly facilities: refer to WaSH facilities that have structures, accessories, or services that promote easy use by children with disabilities. It includes access ramps, special grips, and guiding systems.

Interventions: Interventions are WaSH structures or facilities such as toilets, taps, urinals, tanks, and changing rooms that were previously not in the school prior to 2014 but have been installed in schools to meet a WaSH need with the overall goal of improving children's health and safety.

Poor WaSH: a situation where the water and sanitation and hygiene condition do not meet the standard of WaSH or are in bad or none existent.

1.8 Work outline

The report on this study has been organised into six chapters.

Chapter One is the introduction, encompassing the background of study, problem statement and justification, research questions, research objectives, and the structure of the thesis.

Chapter Two deals with a literature review of issues related to WaSH in schools.

Chapter three discusses the research methodology, including the profile of the study area, sampling, data collection, and analysis techniques used.

Chapter four brings out the results and analysis of the data collected.

Chapter five-brings to light the discussions of findings.

Chapter six is all about the recommendations and conclusions drawn from the study.

CHAPTER 2
LITERATURE REVIEW

This chapter reviews pertinent literature on WaSH in schools and their influence and or relationship with the wellbeing of child and their academic performance as well as the relevance of standardizing interventions.

2.1 WaSH History

A review of literature indicates that as far back as 1987, WaSH programmes had started in Ghana. Mohan, 2001 records that this was the World Bank's first Community Water and Sanitation Project with the objective of "providing basic water and sanitation services to communities that will contribute toward the capital costs and pay the normal operations, maintenance, and repair costs of their facilities; ensuring sustainability of these facilities through community management, including involvement of women; private sector provision of goods and services; and public sector promotion and support; and maximising health benefits by integrating water, sanitation, and hygiene education interventions"(Mohan, 2001). World Vision Ghana also records interventions dating back to 1985, which was the Ghana Rural Water Project (GRWP 1) to respond to safe water challenges in Ghana (World Vision, 2020). Since then, there have been numerous interventions, and these studies have been propelled by the growing interest in meeting the MDGs and SDGs. Darvesh et al., (2017) indicate that interventions to improve access to clean water, sanitation facilities, and hygiene behaviours (WaSH) represent key opportunities to improve child health and well-being (Darvesh et al., 2017).

2.2 WaSH and Children

Numerous studies and articles have confirmed that poor WaSH threatens the health and development (Odunayo, 2014) of children in many ways, such as through infection and diseases

such as diarrhoea (Getahun & Adane, 2021), which could lead to malnutrition and subsequently stunted growth (Keegan, 2018; UNICEF, 2017, 2021a, 2021b). Ngure et al. (2014) confirm this by saying that "poor conditions of WaSH are associated with 6.6% of the global burden of disease and disability, and 2.4 million deaths annually due to diarrhoea, subsequent malnutrition, and their consequences." Just like with many other issues, children in developing countries are the hardest hit when it comes to the impact of poor or inadequate WaSH (Cumming & Cairncross, 2016), especially when more than 80 percent (80%) of children live in developing countries (Burgers, 2000; Humanium, n.d.). This is confirmed in the WHO, 2021 fact sheet that shows that higher mortality countries are concentrated in sub-Saharan Africa. Countries with the highest number of deaths among 5-to-9-year-olds.

The purpose of adequate WaSH is to form a barrier to prevent exposure to disease-causing organisms via five transmission pathways. However, low- and middle-income countries, either due to poverty or poor structures or governance, are handicapped in securing this said barrier. There has been a large decline in the number of deaths of children since 1990 due to a decline in infectious diseases. This could be attributed to the growing global efforts to reduce poor water sanitation and hygiene. This means the mortalities and underdevelopment of children will continue to decrease as the quality and coverage of services improve. (Alemu, 2017; Cumming & Cairncross, 2016; WHO, 2020; USAID, 2019).

2.3 Rational for WaSH in Schools

WaSH in schools is mainly targeted at improving the health and wellbeing of children and staff by creating a safe and healthy school environment (WHO, 2003), influencing positive behaviour change among students and staff, and in the long run, families and communities, finally enhancing and eliminating some threats to the quality of education for a better future for children irrespective

of sex or physical ability. Burgers (2000) documents the deaths of children and people in 1998 and demonstrates the magnitude of the impact that ignoring or failing to address poor WaSH can have on children and children in schools. It further indicates that children in developing countries of school-going age are more than ten times more likely to die as compared with children in developed countries.

It is known that education and social interaction are ways through which human behaviour is changed (Abamecha et al., 2021; Hungerford & Volk, 1990). Hence, schools provide a good environment for learning and behaviour change to take place. It is widely known that the challenges of hygiene and sanitation have led to numerous mobilities and mortalities in children, especially in developing countries, from infections and diseases such as helminth infections, bacterial and viral infections and diseases, diarrhoea, and abdominal pain (Chard et al., 2019; Getahun & Adane, 2021; He et al., 2018; Odunayo, 2014), many of which are preventable. Literature reveals that education and health are inseparable and necessary for the wellbeing of man (Zajacova & Lawrence, 2018).

The condition of the physical environment has an effect on any child, but the duration of exposure compounds the effect on children. The school is one such environment that has a great impact on the wellbeing of children since it meets the above situation. Adequate WaSH helps to create a healthy environment for children. Again, it is easier to imbue new ideas and principles into children as compared with adults.

2.4 Water sanitation and hygiene in Basic schools in Ghana

Water, sanitation and hygiene (WaSH) in basic schools in Ghana is a major public health concern. Poor access to improved sanitation and hygiene facilities in schools has been linked to increased morbidity and mortality(Agyei-Mensah & de-Graft Aikins, 2010; Freeman et al., 2014; Getahun

& Adane, 2021) from water-borne diseases. In Ghana, the majority of basic schools have inadequate access to water, sanitation, and hygiene facilities(GES, 2014; Tiswin, 2019). A recent assessment revealed that only about 20% of basic schools in the country have access to improved sanitation, and the lack of access to water and sanitation facilities has been identified as one of the major challenges facing the education sector (WHO/UNICEF, 2018).

The lack of adequate WaSH facilities in basic schools has been attributed to the lack of resources and weak management systems (Pu et al., 2022), which have resulted in inadequate investment in infrastructure. Furthermore, the lack of awareness among school administrators, teachers, and students on the importance of WaSH in schools has also been identified as a major obstacle in improving access to WaSH facilities in basic schools (Freeman et al., 2012; Mahon & Fernandes, 2010).

To address the issue of inadequate WaSH facilities in basic schools, the Government of Ghana has developed a National WaSH in schools implementation Module to improve access to WaSH services in basic schools. The WinS module aims to promote safe water, sanitation, and hygiene practices in schools, as well as to provide access

2.5 Benefits of adequate school WaSH

As established, every child has a right to good and safe water, sanitation, and hygiene. The importance of Washing cannot be overstated, especially for children. Literature reveals they

include improving the health and wellbeing of children, as in the study by Dahlstrom, 2017; He et al., 2018; and others through decreased exposure to diseases (Trinies et al., 2016; Victora et al., 2003) while increasing their chances of surviving and proper growth. Increasing literacy rates: this is to say that some of the factors that will hinder children from going to school or being able to pay attention will be removed, closing the gender inequality gaps (Son, 2019). The safety of children, especially girls, will no longer have to risk their lives to get water or use sanitation facilities (UNESCO, 2018). It gives children a chance at having a good future. When children are educated, they are more likely to have better job opportunities or create opportunities for themselves in the future. In addition, they are able to make well-informed decisions.

2.6 Types and location of WaSH facilities

According to the GES, 2014, WaSH facilities can be grouped into water infrastructure. They can be grouped into water supply facilities, handwashing facilities, toilets, urinals, menstrual hygiene facilities, and solid waste or drainage facilities. (GES, 2014), it also makes mention of disability-friendly facilities. Handwashing and menstrual hygiene both promote hygiene practices, while toilet, urinal, solid waste and liquid waste fall facilities promote sanitation practices.

WaSH facilities can also be classified as improved or unimproved, or based on the JMP levels of classification, basic, limited, and no service. Water facilities are said to be improved if they have the potential to deliver safe water. According to the JMP by UNICEF & WHO, access to drinking water is improved if "only they are accessible on premises, available when needed, and free from contamination" (*Drinking Water | JMP*, n.d.; World Health Organization (WHO) & United Nations Children's Fund (UNICEF), 2017). Examples include piped water, boreholes, protected dug wells, and rainwater. Alternatively, unimproved facilities are those that provide water, although the safety of the water could be compromised. They are usually not easily accessible or

available when needed. They include unprotected wells or springs, open surface water collected directly from a river, dam, lake, and stream or irrigation canal.

Water supply facilities are those that have the potential to deliver water, while sanitation facilities are those that allow it. Sanitation facilities can also be improved or unimproved based on their ability to separate human excreta from human contact. Examples of improved sanitation facilities include flush or pour-flush toilet or latrine to (Piped sewer system, Septic tank) Pit latrine, ventilated improved pit (VIP) latrine, pit latrine with slab and composting toilet, while unimproved toilet facilities include pit latrine without a slab or platform, hanging latrine, bucket latrine, and pit latrine. Open defecation in fields, forests, bushes, bodies of water or other open spaces, or disposal of human faeces with solid waste (*Assessing Access to Water & Sanitation | Global Water, Sanitation and Hygiene | Healthy Water | CDC*, 2018; Centers for Disease Control and Prevention, 2018) Hartmann et al. (2018) speculate that the location of WaSH facilities has the potential to lower barriers to access and adoption of these facilities. It also brings to light the existence of a potential WaSH location and risk to women.WASH service ladder

These are classification based on standards designed by Joint Monitoring and evaluation used to evaluate and compare service levels across countries. There are three services for water, sanitation and hygiene which are basic, limited services and no service (WHO/UNICEF, 2018) as seen **Table 1** below.

Table 1 JMP Level of Service Classifications

Service Level	Drinking Water	Sanitation	Hygiene

Basic	Drinking water from an improved source and water is available at the school at the time of the survey	Improved sanitation facilities at the school that are single-sex and usable (available, functional and private) at the time of the survey	Handwashing facilities with water and soap available at the school at the time of the survey
Limited	Drinking water from an improved source but water is unavailable at the school at the time of the survey	Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey	Handwashing facilities with water but no soap available at the school at the time of the Survey
No service	Drinking water from an unimproved source or no water source at the school	Unimproved sanitation facilities or no sanitation facilities at the school	No handwashing facilities available or no water available at the school

2.7 COVID-19 and WASH,

Corona Virus Disease-2019 (COVID-19) is a novel acute respiratory disease (Desye, 2021), which emerged at the end of 2019 (Wang et al., 2020). Somewhere at the beginning of the year 2020, WHO declared it as a public health emergency of global concern and on 11th March 2020 declared it as a global pandemic(Nzediegwu & Chang, 2020). According to Desye, 2021 shares that it is mainly "transmitted through respiratory droplets passed either directly when close unprotected contact between an infected and a susceptible individual or indirectly through contaminated hands touching the mucosa of the eyes, mouth, or nose".(Desye, 2021) Contaminated surface to hand transfer from and vice versa is possible. WHO, encourages good hygiene practice, such as hand Washing and other COVID-19 protocols. Ensuring strict adherence to these protocols is of outmost importance to health and safety of people especially vulnerable people like children in the communities, schools, Health Care Facilities (HCF), and other public spaces.

Literature reveals that developing countries with humanitarian crises and vulnerable populations are significantly affected by COVID-19. Desye, 2020 results showed that there is a significant impact on sustainability and continuity of WaSH services as seen in the study by Global WaSH, adding that safe water, sanitation, and hygiene are a necessity to reduce the spread of COVID-19 and maintain good hygiene practises (The Global WaSH Cluster (GWC), Sanitation and Water for All (SWA), UNICEF, and the International Committee of the Red Cross (ICRC), 2020).

2.8 Importance Of Standards

According to American National Standards Institute [ANSI], (2020), "Standards are documented consensus agreements containing safety or technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics for materials, products, processes, and services" (American National Standards Institute [ANSI], 2020). UNIDO (2006)

adds that, standards aim at achieving the optimum degree of order in a particular field (UNIDO, 2006). They are produced for many different products and services, and may be created for company, national, regional, or global applications (TCCA, 2014). However, whereas some standards are mandatory (Sahay & Riley, 2003), others are voluntary and driven by key industry players or NGOs (Teegen et al., 2004). Standards are especially essential for global supply chains and international trade (Castka, 2020). They usually exist to support all aspects of conformity assessment as well as facilitate the implementation of integrated solutions, including compatibility or connectivity with other products, services, and systems (TCCA, 2014).

Many countries and their national standards bodies use standardisation and QI to enhance national competitiveness. Thus, countries develop national standards strategies and align standardisation with areas that are strategically important for national interests (Hudson & Orviska, 2017). For instance, at the national level, standards are used to assist new clusters to develop the competence and ability to compete in international markets (Castka, 2020). Internationally, nations influence the development of standards that benefit their own firms or industries. Additionally, individual firms use standards to increase their competitiveness. For instance, standards help firms establish new technological formats (van de Kaa & de Vries, 2015) or technological solutions (Sahay & Riley, 2003).

Furthermore, standards contribute to the promotion of safety, reliability, fitness-for-purpose, and environmental care. Due to this, standardised products and services are regarded as more dependable, thereby ensuring a rise in user confidence and the takeup of new technologies (TCCA, 2014). Also, standards are one means of disseminating new ideas and technologies. The

study by NPES (2005) showed that they have a positive influence on innovation potential (NPES, 2005).

2.9 Importance Of Monitoring and Evaluation

Monitoring is the process of getting information and using such information to assess project effects and is aimed at determining whether the intended objectives have been met. Evaluation draws on the data and information generated by the monitoring system as a way of analysing the trends in effects and impact of the project (Biwott et al., 2017). Kariuki (2014) defines monitoring as a continuous assessment of the function of project activities in the context of implementation schedules and the use of project inputs. Valadez and Bamberger (2004) further add that monitoring is more of a programme activity, whose role is to determine whether project activities are implemented as planned. It is a management tool that provides continuous feedback on the project implementation as it identifies potential successes and constraints that may guide timely decisions (Biwott et al., 2017).

Evaluation is a process which determines systematically and objectively the relevance, effectiveness, efficiency, sustainability, and impact of activities in the light of a programme's performance, examining the progress made towards the achievement of the stated objectives (Cabrera et al., 2008). Evaluation seeks to answer the effectiveness, efficiency, impact, efficacy, relevance, and sustainability of a development intervention (Kabonga, 2019).Thus, evaluation also aids in determining the degree of achievement of the objectives. It assists in identifying the problems associated with programme planning and implementation (Biwott et al., 2017). Monitoring and evaluation are different, as shown above, but complement each other. For example, monitoring provides information on where the project or programme is in relation to project and programme targets. If targets are not met, evaluation provides evidence why targets are not met

(Kabonga, 2019).

2.10 WaSH Interventions

A study conducted by Ahmed et al., 2021 found out that schools offering any WaSH intervention or running any WaSH policy had a significant impact on the availability of water, sanitation, menstrual hygiene management, handWaSHing facilities, accessibility to hygiene, menstrual hygiene management facilities, the functionality of water, menstrual hygiene management, hygiene facilities, and hygiene practises (Ahmed et al., 2021). Again, USAID indicated that handwashing is the single most cost-effective intervention to prevent pneumonia and diarrhoea in children (USAID, 2019).

Globally, school-based WaSH interventions have various objectives ranging from reducing the incidence of diarrhoea and other hygiene-related diseases as seen in Headey & Palloni's (2019) paper on "Water, Sanitation, and Child Health: Evidence From Subnational Panel Data in 59 Countries" to improving school enrolment, school performance, and attendance to influencing the hygiene practises of parents and siblings whereby children act as agents of change in their households and communities (McMichael, 2019). Another study, Chard et al. (2018), discovered evidence of enteric disease reduction among students attending schools that benefitted from school WaSH improvements versus students attending comparison schools (Chard et al., 2018).

Literature reveals that WaSH intervention also leads to behaviour change, as seen in Chard et al. (2018). Other examples of WaSH interventions include football for WaSH (F4W) and GAMA

2.10.1 Football for WaSH (F4W)

It is one of the WaSH interventions in schools in Ghana, although it exists in other countries like Kenya and Mozambique. The project employs football as a means of achieving healthy behaviour and bridging the gap between hygiene knowledge and actual sustainable hygienic behavior (*About Football for WaSH*, n.d.). The F4W project took place between 2012 and 2019 in schools across Ghana. It is an innovative public-private partnership program, initiated by the Dutch Ministry of Foreign Affairs with the aim of improving WaSH services in schools (Makanyi et al., 2018). Football for Water, Sanitation, and Hygiene (F4W) aims to socially and sustainably embed WASH structures and interventions in school culture (F4W, n.d.). Website indicates that they have provided close to 470,000 children from 745 schools with football-based life skills education and access to WASH facilities. They also improved hygiene and handwashing habits, equipping students to engage in good practises within their families, peers, and communities. (*About Football for WaSH*, n.d.). The specific activities include WaSH infrastructure implementation, football infrastructure implementation, capacity development for knowledge institutionalisation, launching and upscaling of a football competition for the schools, and monitoring.

2.10.2 Greater Accra Metropolitan Assembly (GAMA) Sanitation and Water Project (SWP)

Citi News, a Ghanaian news agency, published an article on the Greater Accra Metropolitan Assembly (GAMA) Sanitation and Water Project saying "The GAMA Sanitation and Water project is a US$150 million initiative by the World Bank with the collaboration of the Ministry of Sanitation and Water Resources to help lower-income level communities have access to affordable toilet and water facilities."(CITI NEWS ROOM, 2020; Debrah, 2021). The project started in 2014 and ended in 2018. So far between 260 - 280 schools in Accra is said to have received

inclusive, gender-conscious and disability-friendly toilet facilities(Gmbh, 2021) and water supply to improve institutional sanitation (Business Ghana, 2018) . It had the aim of strengthening the management of environmental sanitation (Gmbh, 2021) in the GAMA with its specific components including the provision of environmental sanitation and water supply services to prioritize low-income areas of the GAMA.

CHAPTER 3
METHODOLOGY

This section provides a description of the study area and the methods used. The methodology includes the sampling techniques, sampling sizes, data collected, and analysis conducted. The final section presents the ethical considerations that guided the study.

3.1 Study Area

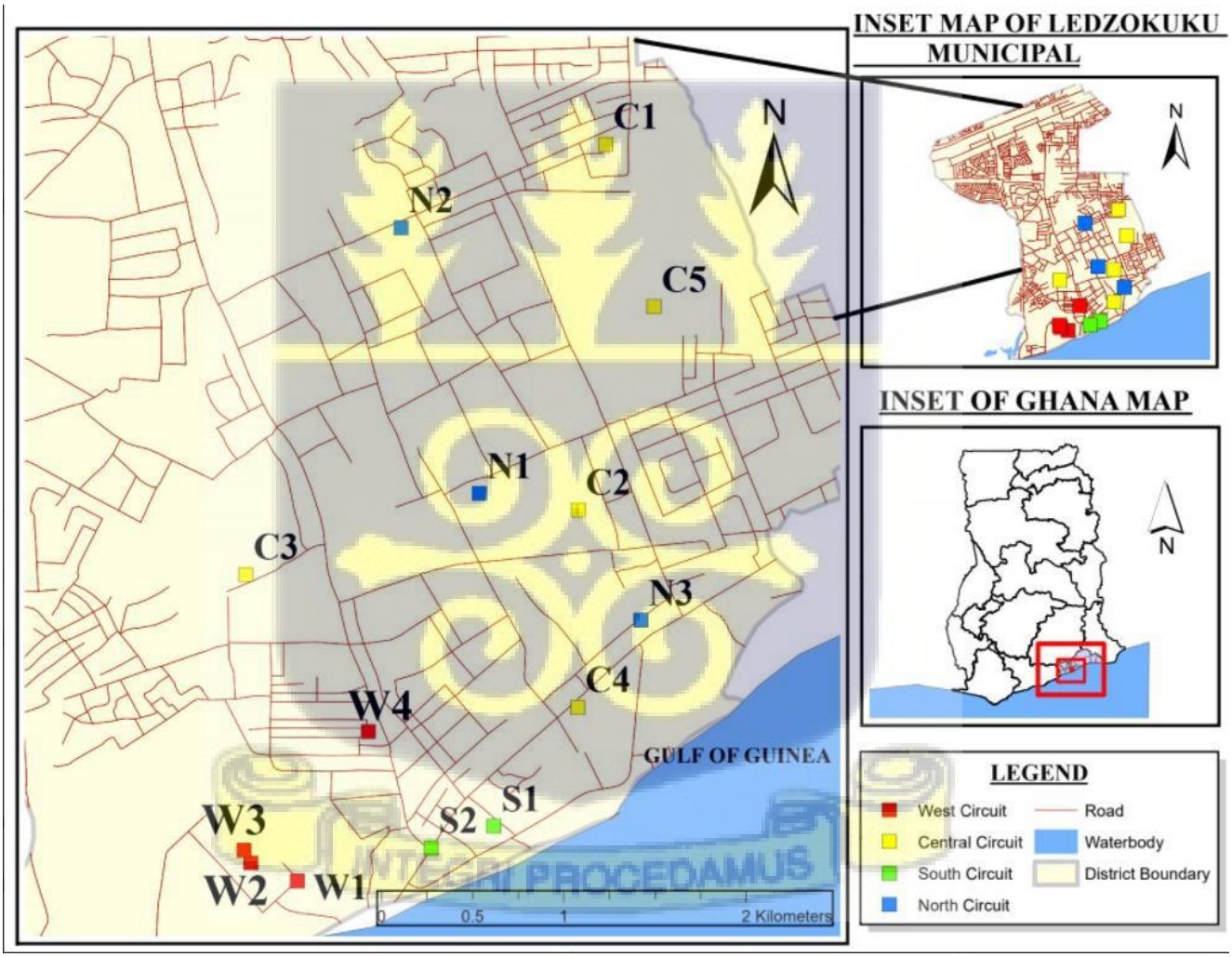


Figure 3: Map of the data collection points in LeKMA

3.2 Scope of study

The study was carried out in fourteen (14) public basic schools per the grouping of the study, but in actual terms, forty-two (42) schools in the Ledzokuku Municipality of Ghana. The study mainly assessed whether WASH facilities were available, their state, their donors, and whether they were provided before the WinS implementation module or not. It also assessed adherence to the module and how this affected the state of WASH facilities to create a conducive environment for the children in LeKMA. Specifically discussed are the percentage of schools that had adequate WASH facilities, the type of WASH facilities, and the location of these facilities. As well as the condition of the facilities and the extent to which the school had adhered to the standards, and if that had improved WASH in the schools. All parameters in the study were compared with standards set by the Ghana Education Service, WHO, and UNICEF, with findings from additional references from literature.

The Ledzokuku Municipal Assembly (LEKMA), established under Legislative Instrument (LI) 2319 on November 1, 2017, is located in the Greater Accra Region, in the southern part of Ghana. On the other hand, it is bounded by the Gulf of Guinea on the southern end, east by Krowor Municipal Assembly, to the north by Adentan and Ayawaso West Municipal Assemblies, and west by La Dade-Kotopon Municipal Assembly (LEKMA, 2018). Present in the municipality are six educational circuits (geographical areas), namely: Ledzokuku North, Ledzokuku South, Ledzokuku Central, Ledzokuku West, Krowor North, and Krowor South. The source of water for the municipality is the Kpone Water Works. The profile of the district indicates that the most critical water problem in the municipality relates to the inability of the supply of water to meet the demand of the people. Some WASH projects or initiatives that can be found in the municipality include the Greater Accra Metropolitan Area Water and Sanitation

Project (GAMA-SWP), which seeks to increase access to improved water and sanitation in low-income areas. The municipality is estimated to be about 198274, with children making up 31.6%. There are fifty (50) public schools in total in the municipality.

3.3 Study design

The study was a cross-sectional study. Both quantitative and qualitative methods were employed for data collection. The study examined the current state of WASH facilities in basic public schools in the Ledzokuku municipality of the Greater Accra region. It examined the adherence of the provision of WASH with the national implementation module for WASH in basic schools (WinS).

The study sought to explore the current state of the WASH facilities present in the school. This meant the study examined the presence and condition of the WASH facilities and, based on the findings, characterised the facilities. Data was collected using both qualitative and quantitative methods, including field visits as well as desktop studies. The study explored the differences between schools that had implemented the Win module and those that had not, while highlighting the improvements or not the module had brought to various schools. It also sought to identify what factors influenced the changes or not in these schools.

Observations, checklists, and semi-structured questionnaires were used to collect qualitative and quantitative data. All the data was collected while all students were in school to get a more accurate representation of the ideal state of the WASH facility at maximum capacity.

3.4 Study Population

The basic education system comprises kindergarten, primary, and junior high schools; that is, children in school between the ages of four (4) and fifteen (15) years. The study population

consisted of public kindergartens, primary and junior high schools in the Ledzokuku Municipality. This approach was selected because the requirements in the model were not level- specific, except in cases like menstrual hygiene, which applied to adolescent girls. Moreover, considering the various levels will give a more representative look of the schools in the municipality while placing equal value on the various levels of education. Again, in order to overcome the challenges of separation, data was collected from schools that had all three basic educational levels and shared the same WaSH facilities as opposed to schools that had one level, considering all three levels addressed this. As already established, children are more vulnerable to the effects of poor water, sanitation, and hygiene.

Based on management, the municipality had a total of 50 public schools. This study, however, reclassified the schools based on shared facilities and locations, changing the names of schools and levels. For example, all schools in a cluster were considered one school because they shared the same facility, were on the same compound and were not level-specific. Hence, the total number of schools for the Ledzokuku municipality was 19, out of which 14 of the schools were selected.

3.5 Study Units

The units of this study were the 14 reclassified schools. The head teachers and/or SHEP coordinators (if available) or anyone in the capacity to provide the needed information represented the school. The Municipal SHEP officer was engaged to facilitate data collection while providing a better understanding of the WASH situation in schools across the municipality.

3.6 Sample Size determination and characteristics

A sample size was determined by using the formula by Yamane (YAMANE, 1967). The list of schools was obtained from the Municipal Education Directorate of GES Ledzokuku Municipality. The study sought to ensure that each school in all four (4) educational educational circuits had an equal chance of being selected and, to eliminate biases, used the stratified random sampling technique. The educational educational circuits constituted the strata and the schools constituted the sample units, and an appropriate stratification approach was used as per the approach by Ann Bowling (Bowling, 2009). The actual sample size was fifty (50) based on the list obtained; however, with the help of the SHEP coordinator, the schools were grouped based on location, names of the schools, and if they shared the same WASH facilities, bringing the total to nineteen schools (19). A 95% confidence level and a 15% level of precision were used. Fourteen (14) public schools were selected out of 19 public basic schools in the Ledzokuku municipality, representing seventy-four percent (74%) of the public schools. The figure was at using Yamen's simple random sampling size determination formula.

$$n = \frac{N}{1+N(e)^2}$$

Where n = number of schools data was collected from (sample size),

N = total population of schools in the Ledzokuku municipality

e = the margin of error (15%).

The calculated sample size was 13.31 schools, approximately 13 schools. However, 14 schools were selected for the study. This meant approximately four (4) from each of the four educational circuits in Ledzokuku were selected for the study. However, because the number of schools varied

for each circuit, all schools within the educational circuits that had fewer than four schools were selected, and the rest of the educational circuits that had more than four schools were randomly selected based on balloting. In all, 3, 2, 4 and 5 schools were selected from the Northern, Southern, Western and Central educational circuits respectively. Educational circuits four and five had a total of seven each. Although the school had randomly selected for one reason or another, three of the schools selected to participate in the study were unable to participate in it. Hence, other schools in the circuit were selected to participate in the research instead. **Table 2** below shows the number of schools per educational circuit.

Table 2: Showing the method for sample size selection

Educational Circuit	Number of public schools	Estimated No. Of Schools Required	Schools sampled
Ledzokuku South	2	2	2
Ledzokuku North	3	3	3
Ledzokuku Central	7	4	4
Ledzokuku West	7	4	5
Total	19	13	14

3.7 Sampling Technique

For the purposes of administration, the municipality had four (4) established educational circuits. This study chose to maintain the number of educational circuits as established in the municipality. The technique applied in the study was a stratified random sampling technique.

Semi-structured questionnaires were used to guide the interactions to tease out information from the school heads or anyone with the capacity to respond on behalf of the schools.

The observational checklist, which is a list of things that the researcher sought to identify and examine based on observation at the sample location, was used to gather additional data on the conditions of the school.

For the sake of reference and verification, pictures and videos of the various facilities observed were also taken. And interviews recorded for reference and verification.

3.8 Study Variables

The variables selected for this study included the number of teaching staff, pupils, gender, physical disability, etc. Other variables were the availability and number of WASH facilities, status of interventions received (none/received), types and location of WASH facilities, state of the facilities, factors promoting the quality of WASH facilities in basic schools, and factors promoting or inhibiting the translation of national implementation for WinS on the ground. The conditions of facilities were assessed based on the criteria used in the JMP 2018 report on WinS, as shown in **Table 3 below**.

Table 3: Showing the Assessment Terms for The Various Aspects Of WASH

Assessment Term/ Condition/Service Ladder	Water	Sanitation	Hygiene
Basic	Drinking water from an improved source and water is available at the school at the time of the survey	Improved sanitation facilities at the school that are single-sex and usable (available, functional and private) at the time of the survey	HandWaSHing facilities with water and soap available at the school at the time of the survey
Limited	Drinking water from an improved source but water is unavailable at the school at the time of the survey	Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey	HandWaSHing facilities with water but no soap available at the school at the time of the survey
No service	Drinking water from an unimproved source or no water source at the school	Unimproved sanitation facilities or no sanitation facilities at the school	No handWaSHing facilities available or no water available at the school

As used by Tiswin, (2016), the pupil to facility ratio (PFR) was used to determine the adequacy of the facilities as seen in Table **4** below:

Facility	Number of pupils	Number of facility (ies)
Toilet	50	1 cubicle (squat hole)

Table 4: pupils to facility ratios

3.9 Data source

3.9.1 Primary Data

During the fieldwork in Ledzokuku municipality from July to August of 2021, primary data were collected directly from respondent .It was reliable to get the information from them because they managed the facilities or were involved with the monitoring and evaluation of the facilities. A preliminary survey was conducted in five different schools in the municipality, i.e., three public schools and two private ones, before the main data was collected. The purpose of this testing was for the researcher to become familiar with the situation on the ground and to fine-tune the research instruments to improve the quality of data to be collected in the final stage. However, private schools were not included in the actual study because collecting data from them proved difficult. The study initially tried to understand and compare the WASH situation in private schools against those in public schools to see if there were any significant differences since no private school had received any form of intervention.

3.10 Data collection and study instruments

Data for the study was collected using Semi structured questionnaires and non-participant observation, after which the information derived was put together to make have a clearer understating of the situation and for better analysis.

3.10.1 Engagement with key informant

Semi-structured questionnaires were administered to each school head or any person in the school capable of providing the needed information. This was because they played managerial roles in the school and would have a clearer understanding of the WASH situations in the school. In all, data was collected from fourteen (14) public schools. Data included the number of toilets, urinals, and menstrual hygiene facilities, water sources and use, facility usage, management, and operation of the WASH facilities.

3.10.2 Non participant observation

Non-participant observation in the form of a checklist was used as a means to collect information on the presence or absence of the WASH facilities, such as toilets, hand WaSHing facilities, urinals, water sources, and state of the facilities.

3.11 Quality control

All data collection tools were pretested and corrected before being carried to the field to ensure the information received met the objective of the study and was a true reflection of the situation on the ground. The data collected in the field was cleaned before it was analysed.

3.12 Data Presentation and Analysis

3.13.1 Data Entry and Data Analysis

Qualitative data (semi-structured questionnaires and information from observational checklists) was collected and inputted into the computer database, and the Excel and were used as instruments for the analysis of the data. Describtive statistics were applied during the analysis and presentation of the data in order to meet the research objectives, simple statistics such as mean, mode, and range were used to describe the results. A 95 % Significance test was run to determine how schools that

had received interventions differed from schools that had not received interventions.

The study examined the current state of WASH facilities in basic public schools in the Ledzokuku municipality of the Greater Accra region. It examined the adherence of the provision of WASH with the national implementation module for WASH in basic schools. The current state of this study involved examining the presence and condition of the WASH facilities and, based on these, the facilities were characterised as WASH in basic schools.

Qualitative data was analysed based on themes like hindering and enabling factors to further enhance the study. Microsoft Excel 2017 was used. A database was created and responses from the questionnaire and non-participant observations were entered. The data was then cleaned. The state of the WASH facilities for each was then analysed and compared with other schools, and meaning was made out of it. The trends in standard compliance for each school and circuit were examined.

3.13 3.12 Ethical clearance

An application for ethical clearance was put in by the researcher through the Ethics Committee for Basic and Applied Sciences (ECBAS) of the University of Ghana and the clearance was given for the period of the study. Letters were also sent to the municipality and the Ghana Education Service of the municipality to inform them and get the needed assistance and cooperation in carrying out the work. GES also sent letters round to their schools, informing them of the research and encouraging them to offer the needed support. Also, informed consent of the sampled schools was sought and the significance of the study was clearly stated and explained to them.

During the field visits, a brief, concise document was given to respondents and was clearly explained, informing the respondents of the purpose of the study and seeking their informed consent. They also had the option to quit with no repercussions if they so desired. For privacy reasons, the tools used were intentionally not designed to collect the names of respondents. At the end of the study, copies of the final report were made available to the GES of Ledzokuku municipality, the University of Ghana, ECBAS, and the Institute for Environment and Sanitation Studies. Relevant findings were shared with the participating schools that wanted feedback.

3.11 Limitation

Data collection had to be delayed so as to find an appropriate time where all the levels of basic education were in school as COVID-19 had disrupted the academic calendar of schools. Findings from this study may not be generalised beyond the basic schools in the Ledzokuku Municipal assembly unless they share similar conditions.

The Ledzokuku Krowo Municipality is a newly formed municipality; hence they are still compiling data on the municipality specific to them. Some heads of schools, some teachers of the schools and staff of the municipality were new to the school and municipality, respectively. For this reason, the information they could provide on the WASH history of the school and the school was limited. Again, it seemed schools did not document issues regarding their WASH services, as finding records of WASH interventions proved to be a challenge.

This study was done at a time where concern for COVID-19 was high, hence the outcomes are likely to differ without the influence of COVID-19.

CHAPTER 4

RESULTS

This chapter present the results of the various objectives of the study.

4.1 Characteristics of surveyed schools

All the schools/clusters visited had more than one level or school, which were found to be on the same compound. Table 4.1 shows the number of boys and girls per circuit. The total population of girls and boys in the basic school in the municipality was fourteen thousand one hundred and forty-four (14140), with girls making up approximately fifty-two (52%) and boys forty-five (45%) respectively. Ledzokuku North had the most students, 4548, while Ledzokuku West had the fewest, 2331. As shown in **Table 3.1** below, only two (2) schools reported having children with any physical disabilities, making that 0.02% of the pupil population. The pupil to teacher ratio of the municipality was approximately 47:1. Primary pupils make up the highest population of the basic schools in LeKMA, which is seven thousand nine hundred and eighty (79880), while kindergarten (KG) makes up the least population, one thousand four hundred and thirty-four (1434). The youngest age recorded in the municipality was three (3), the mode was four (4), and the range of ages was three to seven years old (3–7) depending on the level. All the schools were recorded as having a parent's association (PA), while only eleven (11) schools affirmed having a formal institutional link to the community, which was the school management committee.

Table 4.1: The number of boys and girls in the various levels of the school in each Education educational circuits

EDUCATIONAL CIRCUITS	KG		PRIMARY		JHS		**TOTAL**
	Boys	Girls	Boys	Girls	Boys	Girls	
LEDZOKUKU NORTH	205	248	1210	1290	721	874	**4548**
LEDZOKUKU SOUTH	134	120	901	904	640	676	**3375**
LEDZOKUKU CENTRAL	183	176	1207	1246	443	631	**3886**
LEDZOKUKU WEST	194	174	626	596	372	369	**2331**
TOTAL	**716**	**718**	**3944**	**4036**	**2176**	**2550**	**14140**

4.1.1 **Gender Parity Index**.

The overall GPI or the ratio of boys to girls, for all the levels of the schools in LeKMA was greater than or equal to one. The GPI for primary and JHS were very close to one (1) as compared with that of the KG's. The lowest GPI was recorded in southern and western educational circuits of KG as 0.89 and 0.897 respectively.

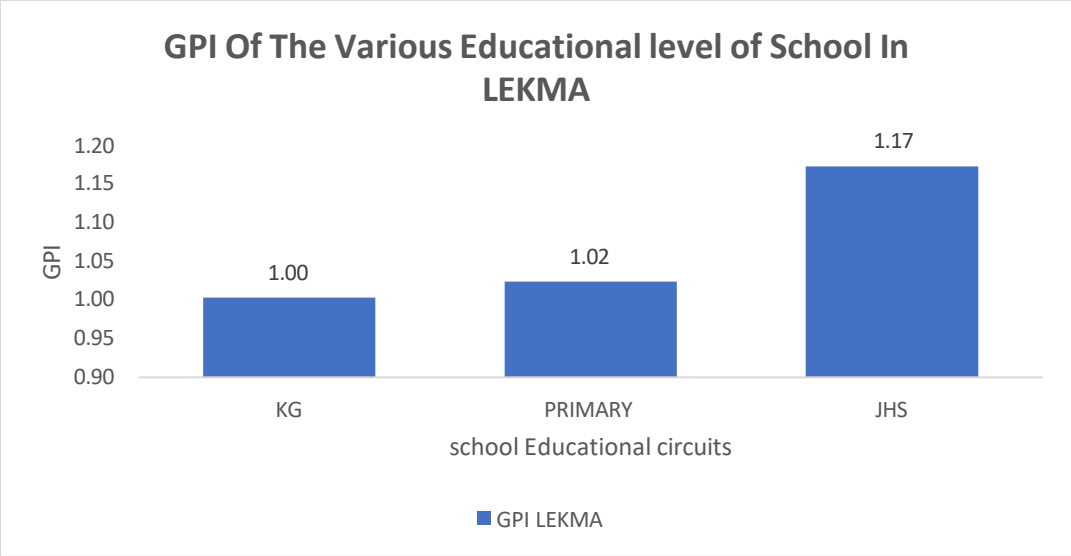


Figure 4: A Bar chart Showing the GPI Of the Various Educational level of School in LEKMA

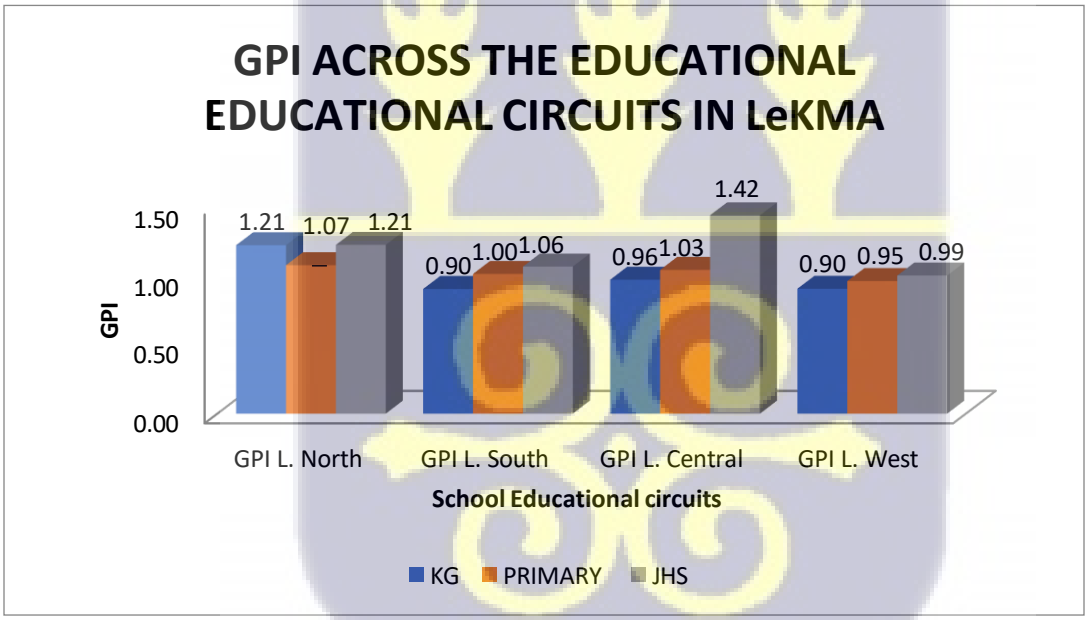


Figure 5: A Histogram showing the GPI for the corresponding educational circuits in LeKMA

4.2 WASH Promotion

Twelve (12) of the fourteen schools had a school self-assessment program/improvement plan (SSA/SIP) and nine (9) of these included WASH in their plans. Four of these schools had clubs to further enhance WASH awareness and promotion in their schools.

4.3 Status Of Interventions

4.4 The status of intervention was grouped into two. i.e., those that had received and those that had not received any form of intervention. Those that had received intervention received it in the form of newly constructed WaSHrooms or rehabilitated WaSHrooms. Twelve schools out of fourteen received intervention (86%), while two schools did not (14%).

4.5 Access to WASH facilities

4.5.1 Location Of WASH Facilities

All the schools selected with toilet facilities had their WaSHrooms for students present on the same compound. However, only six schools did not share WASH facilities. The locations of toilet facilities were either attached to the school building or detached. Thirteen (13) of the WaSHrooms detached from the school building were found in three (3) schools in the North, two (2) schools in the South, four (4) schools in the central and four (4) schools in the western educational circuit, respectively. On the other hand, four (4) of the WaSHrooms attached to the school building were found in one (1) school in the South, two (2) schools in the central and one (1) school in the western educational circuit, respectively.

The WaSHrooms detached from the building were further observed to be of varying distances but not more than thirty metres away from the school building. Never the less, all were found on the

premises of the school as seen in **figure 6,** which shows the classification of WASH facilities based on location in the various schools of the educational circuits.

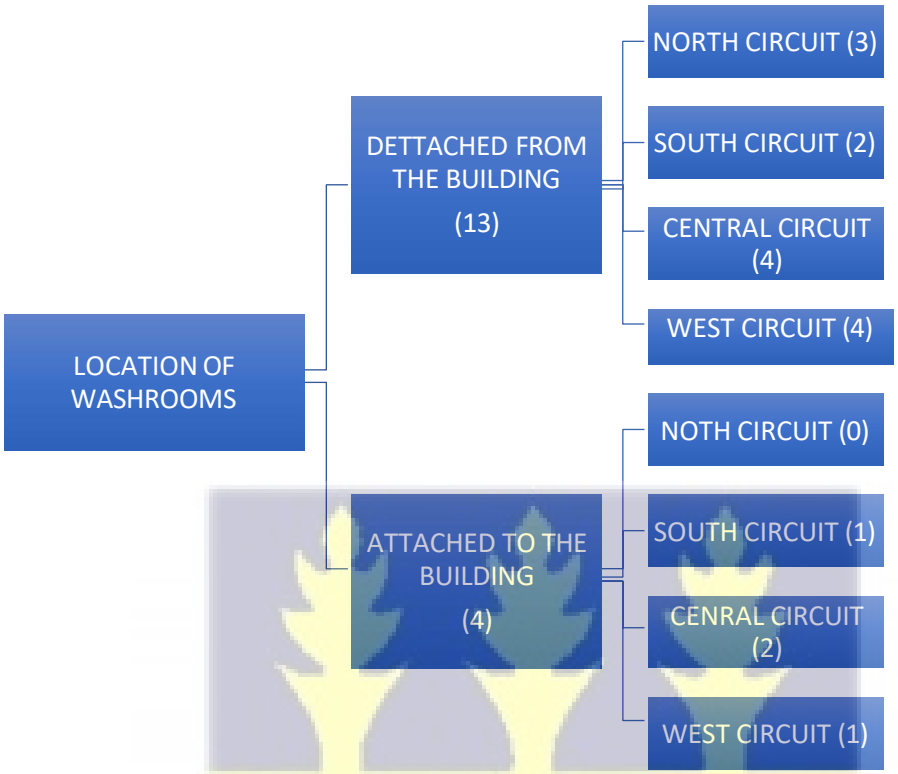


Figure 6: Classification of educational circuits based on location WASH Facilities in the educational circuits.

4.5 Water

There was no drinking water service in all the schools at the time of the study, although at one of the schools in the southern circuit and another in the northern circuit, some students were recorded to occasionally drink water from the taps. Of these two schools, one prior to COVID-19 provided cups that the students shared when drinking water. All the schools in the municipality had water on their premises but these were not suited for drinking.

The main source for seventy-one percent (71.43%) of the schools was pipped water into the building, followed by twenty-one (21.43%) with piped water into the yard and one school

(7.14%) buying water from tankers. Two schools recorded alternative water sources as boreholes and rainwater harvesting each. Sixty-four percent (64%) of the schools reported that the water flow was between two and four (2–4) days a week, 29 percent (29%) reported that the water flow was between five and seven (5–7) days a week, and seven percent (7%) reported that the water flow was less than twice a week in the school where they purchased water. All the schools reported that the regularity of flow meets their water needs.

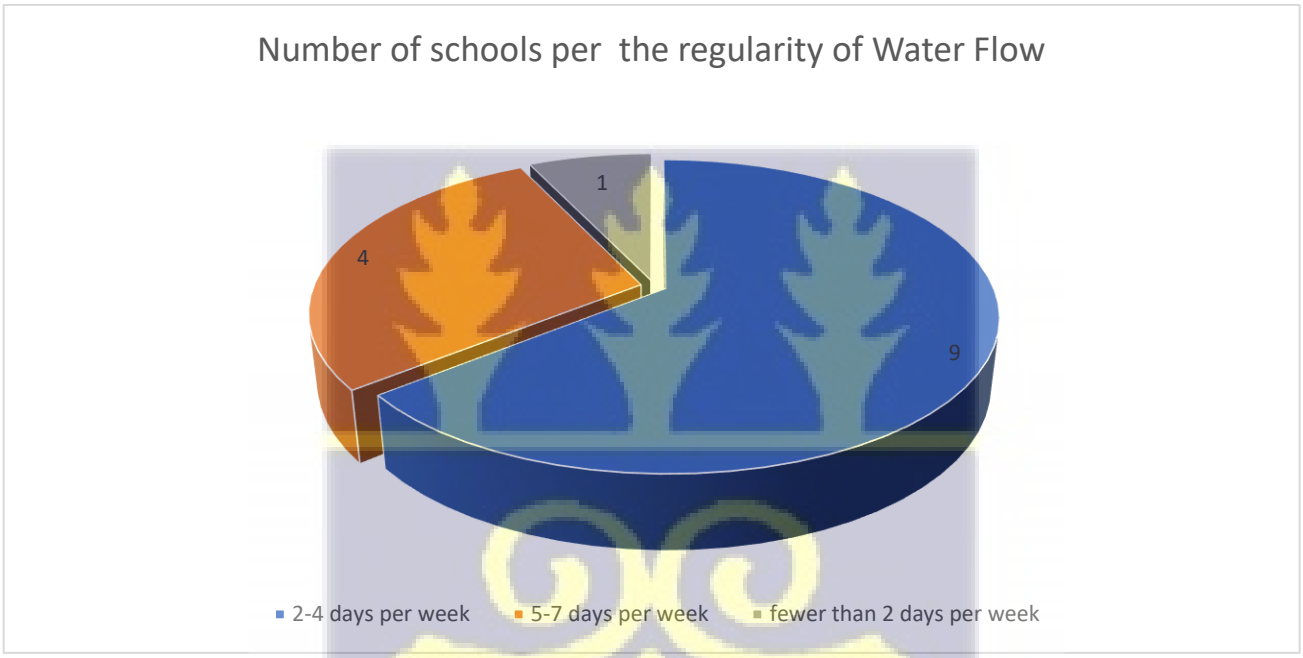


Figure 7 pie chart showing the regularity of water across the schools

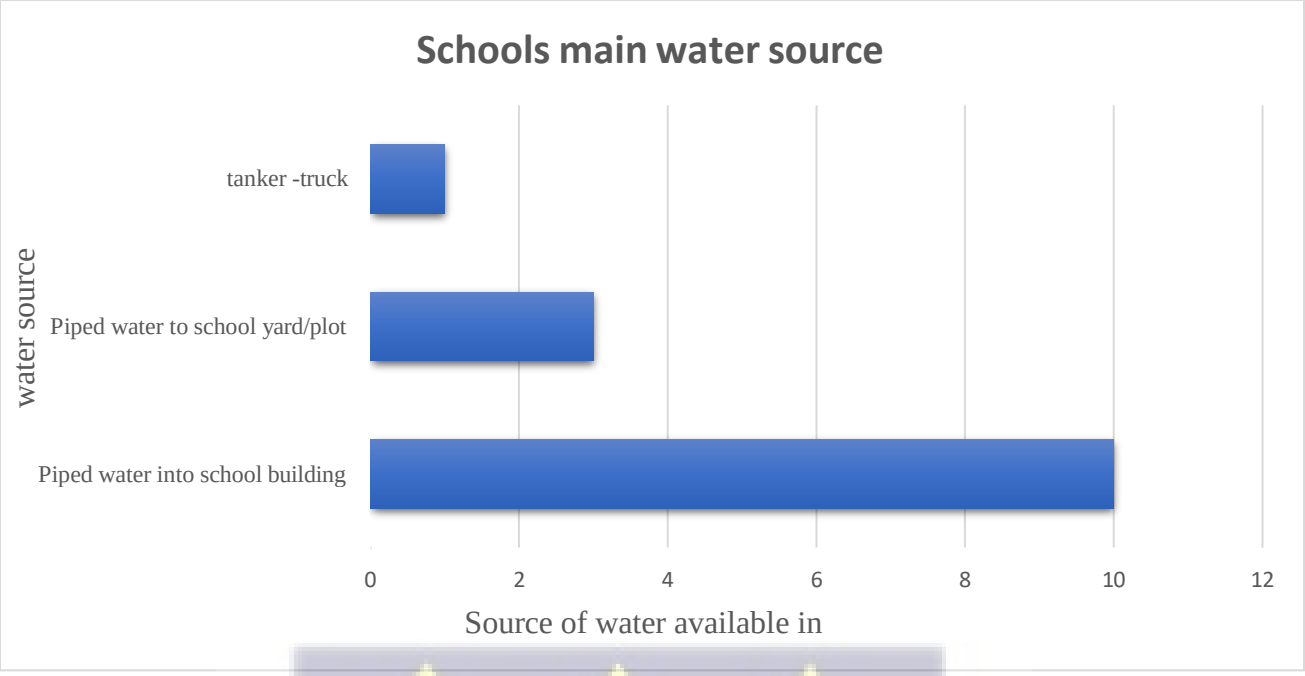


Figure 8: showing water sources present in the school

4.5.1 **Water usage and quality**

LeKMA recorded five (5) uses of water, with flushing toilets, hand Washing, and cleaning being common in all schools. Watering plants was recorded in one school, and so was anal cleaning with water in two schools. Anal cleaning with water was for religious purposes. The water from the borehole was used for the same purposes as tap water, which is from the Ghana Water Company. However, the harvested water was only used for flushing and cleaning. None of the schools treated their water or did any form of water quality testing because it was believed to be safe. The survey revealed that the youngest children across the schools and educational circuits could access the most water facilities by themselves without any help from their parents.

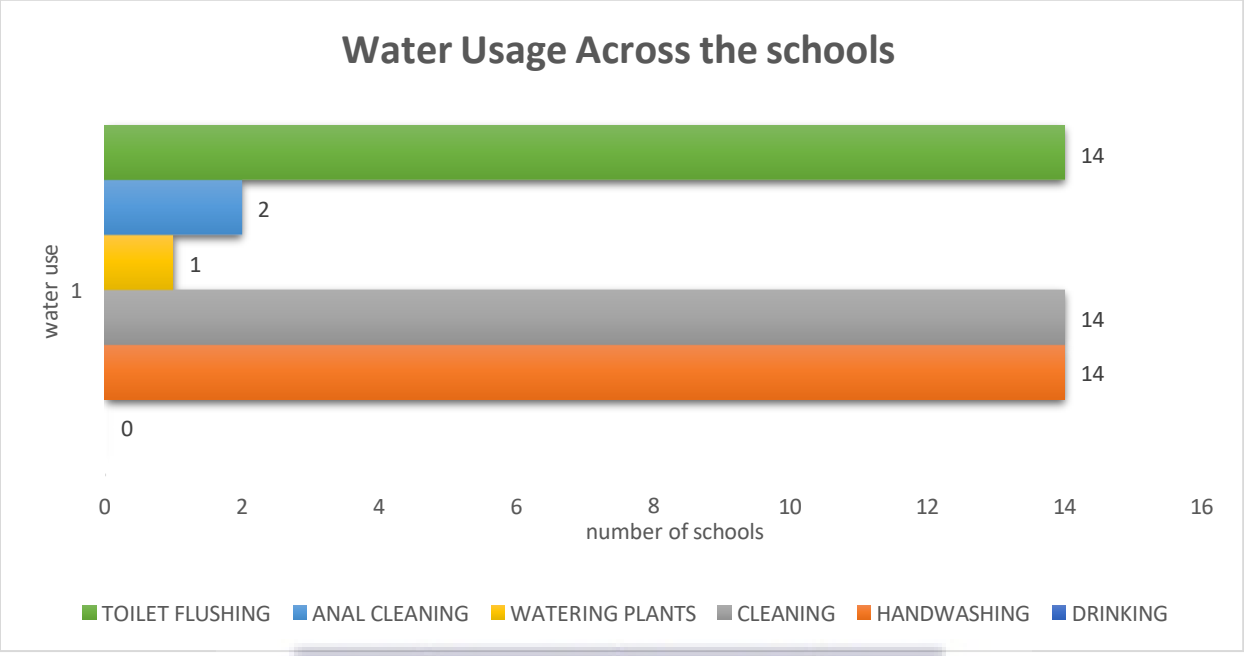


Figure 9: showing water usage across the schools

4.6 Sanitation

4.6.1 Toilet facilities

Thirteen schools had toilet facilities available; however, only one school in the central cluster had no toilet facilities, as shown in **figure 5**, so the children left the school to use nearby facilities. All thirteen schools used improved toilet facilities, all of which were pour-flush toilets. The pour/pour toilets were categorised into water closets (WC), which were either disability- friendly or not, and the squat toilets that came with a flushing mechanism or without.

The highest number of toilets in a school was six (6), which was found in the northern circuit, and the least was zero (0), which was found in the central circuit. The WCs and disability- friendly toilets were found in all fourteen schools. However, only seven schools had the squat toilets. The central circuit had the greatest number of toilet facilities, with fourteen (14) as compared to the southern and northern educational circuits, with seven (7) toilet facilities each.

Table 5: status of toilet availability

Status Of Toilet Facilities Available	Number Of Schools
Available	13
Unavailable	1
Total	14

Table 6: number of toilets in the schools and circuit

School Educational circuits	Number Of Toilets	Number Of Schools
western circuit	10	3
southern circuit	9	2
northern circuit	9	4
central circuit	14	5

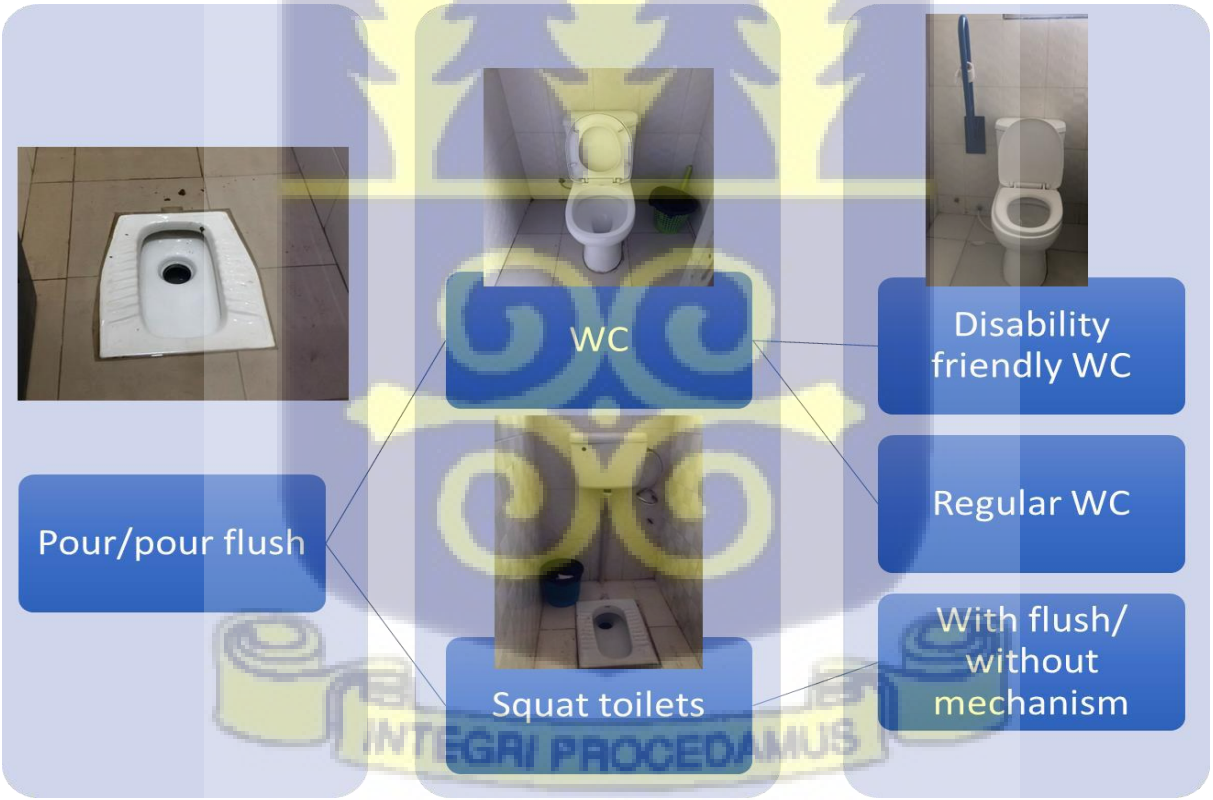


Plate 1:Photographs of types of toilets available in schools in the study area.

4.6.2 **Toilet usage**

Fifty-four percent (54%) of the schools in the survey used all their toilet facilities, while forty-six percent (46%) used some. The usage across the circuit was similar. Two schools, one in the north and another one in the central circuit, were the only ones with a student-to-toilet ratio of less than one (1:50). The others exceeded this, with the highest ratio being one toilet to 171 students (1:171), recorded in the southern circuit. Seventy-one percent of the school recoded some form of shared facility for boys and girls, while 21% strictly adhered to specific sexes' toilet use as seen in **table 10** below.

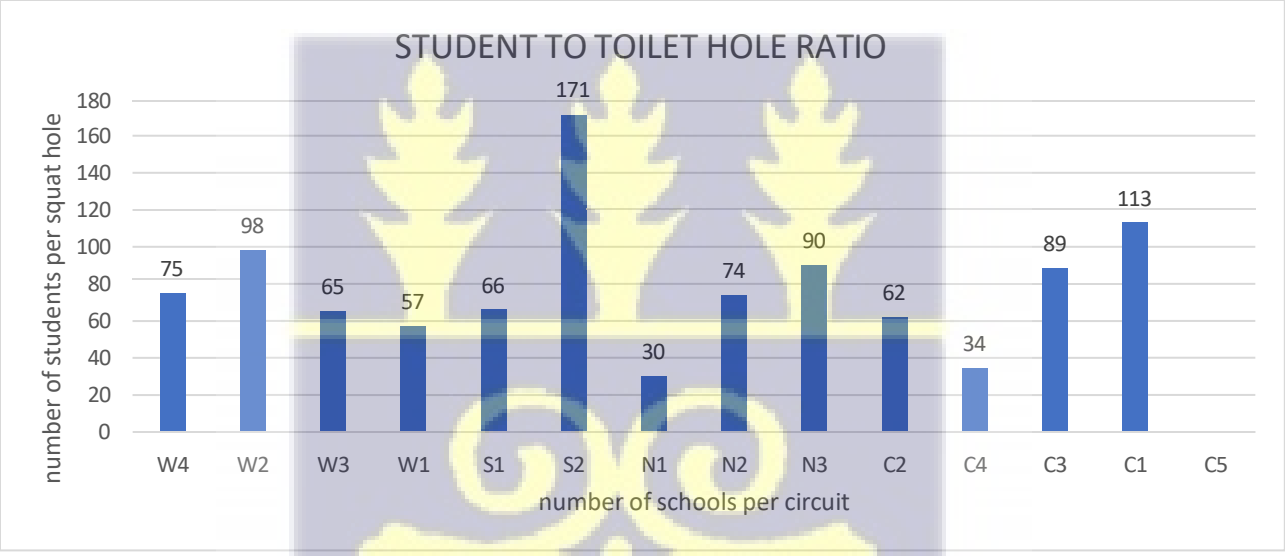


Figure 10: School pupils' number to toilet hole ratio

4.6.3 Cleanliness of facility

Facilities cleanliness was grouped into three categories; clean, not clean, and somehow clean across the thirteen schools with toilet facilities. Fifty percent (50%) had clean toilets while another fifty percent (50%) were somehow clean. All the thirteen (13) schools with toilet facilities were recorded as having a janitor to clean their facility. One school was recorded as

having a janitor, but at the time of the study, the pupils were cleaning the toilet facilities due to the janitor's ill health as shown in figure 11 below.

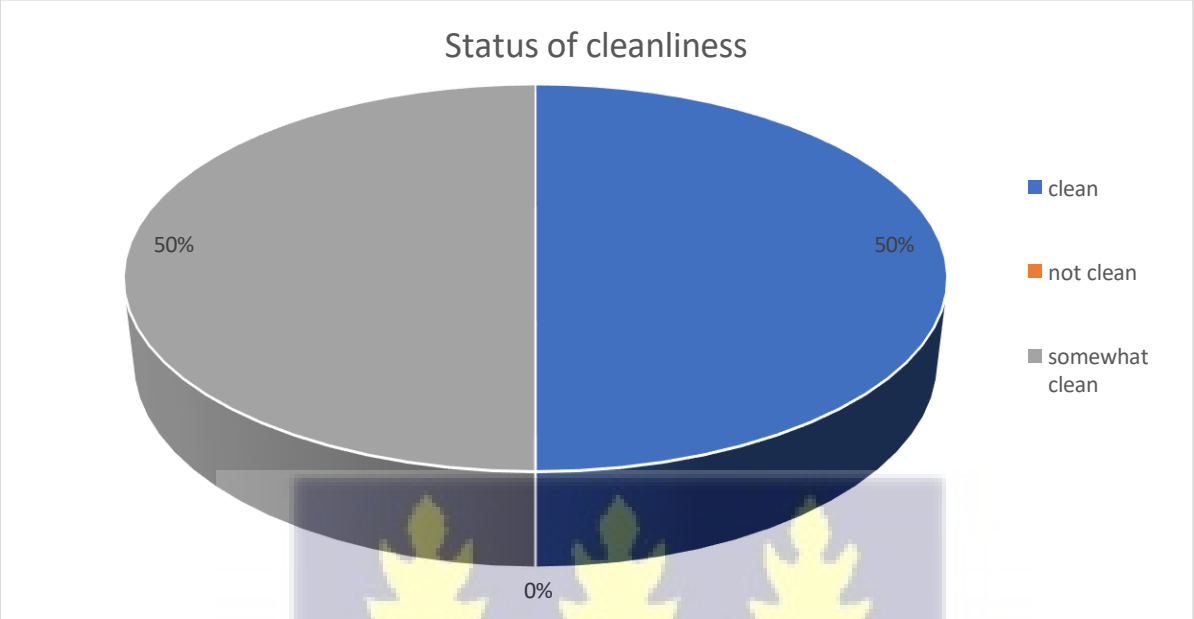


Figure 11: Status of toilet cleanliness

4.6.3 Disability friendly

All schools but two schools had disability-friendly toilets. The highest number of disability-friendly toilets was found in the western circuit, at eight (8), and the lowest number found in the southern circuit was four (4).

4.6.4 Solid Waste Disposal

Three methods of waste disposal were identified in the schools, namely: burning, burying, and collection by waste collectors. Burning was the most popular waste disposal method (≈57%), followed by burying and waste collection as the least popular (≈21%). One school in every circuit had waste collected by solid waste collectors, except for the southern circuit, which had all its waste burned. One school in the northern circuit noted that solid waste was both burned and collected by solid waste collectors. Solid waste was recorded to be disposed of or collected mostly

once a day (9), followed by less than once a week (1) and once to twice a week (4) as shown in figure 12.

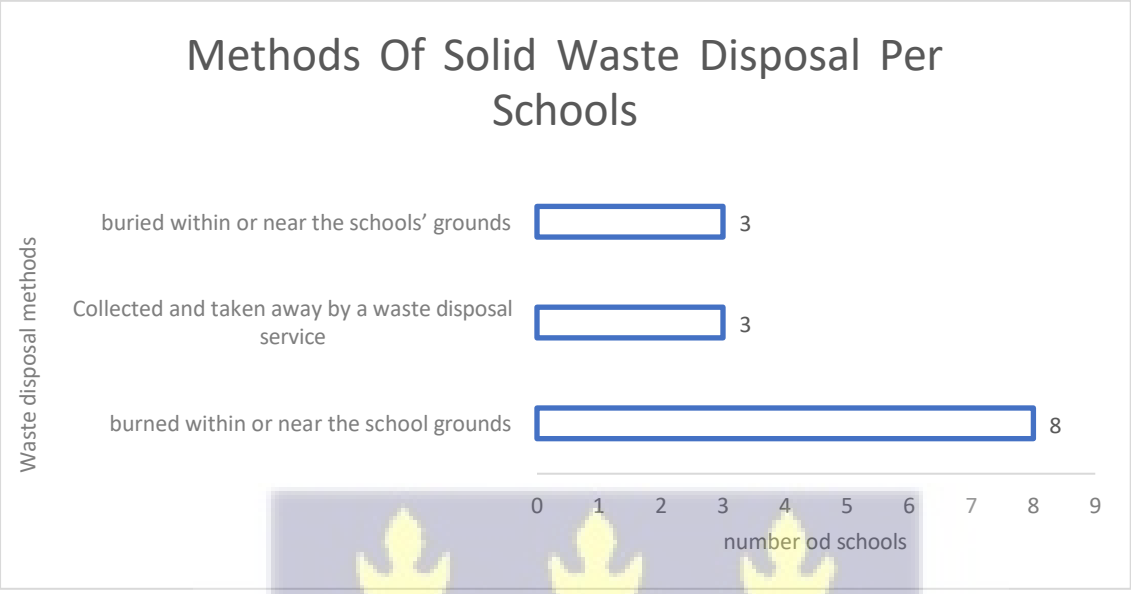


Figure 12 Showing the Various Waste Disposal Methods Used In the Schools

4.6.5 Waste segregation in schools

Segregation of solid waste was recorded in forty three percent (43%) of the schools, with the central circuit having the highest number of schools segregating waste. The waste was segregated into plastics and paper. Five (5) schools that segregated plastic had waste in the form of waste sachet water bags. Paper was segregate in one school and was burned after wards this was recorded in the northern circuit. Three of these schools had segregation bags for plastics visible to all. The other two were done by individuals.

4.6.6 Liquid waste management

Septic tanks or biodigesters make comprised the onsite sanitation system at thirteen (13) schools. Again, all but one of the schools with toilets did not have a schedule for removing waste, further demonstrating that they were unaware of when the process was complete. Typically, the garbage

was removed as and when it was required. None of the schools provided information regarding the location of the liquid waste disposal. Eight schools reported having some type of drainage for some waste water, compared to six that said they had none for waste water drainage from the school grounds. However, eight schools had some form of drainage system that drained water from handwashing stations and rain water. Two (2) schools indicated that drainage was not incorporated into the building design.

Plate 2: Showing the Various Sanitation System Used In The Various schools IN LeKMA

4.6.7 Urinals

The fourteen (14) schools contained indoor and outdoor urinal facilities, which could be distinguished by their position. These were further categorised based on positions into wall-mounted urinals and floor urinals on the floor, as seen in plate 3 below. Floor urinals were the most abundant for both boys and girls (71%). The wall-mounted urinals were only found in male washrooms (14%). The outdoor urinals were either tiled (14%) or not (7.1%). The urinals indoors were all tiled. Only one school that had received intervention had an outdoor urinal, but these were old structures that had not been taken down and were still in use. The other outdoor urinal was found in the two schools that had not received interventions. All new intervention toilets had urinals constructed with tiles and water for cleaning mechanisms incorporated. However, water was not flowing through more than forty percent (40%) of the mechanisms. None of the roofs were made with transparent material to allow for sunlight.

Plate 3: A Showing tiled Outdoor Urinals ***B showing indoor urinal***

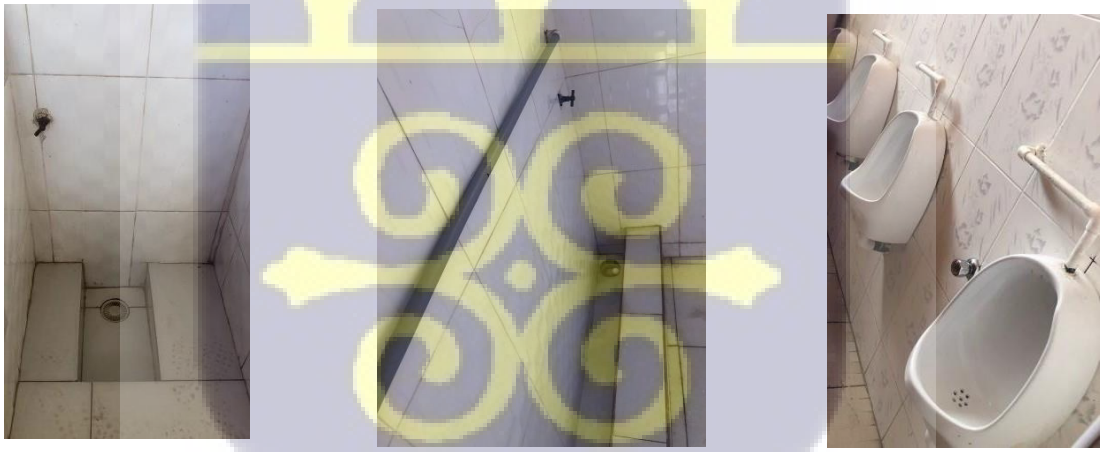


Plate 4. Examples of floor mounted indoor urinal (A). B is a wall mounted pot in an indoor urinal.

4.6 Hygiene

4.6.7 Menstrual hygiene

Ninety-three percent (93) of all schools provided menstrual education sessions to older girls, promoting safe and private menstrual hygiene. The other school was a KG school, so this was not done. There was no napkin distribution programme in any of the schools. Although occasionally, some groups donate to support menstrual hygiene. As seen in **plate 4**, eight out of the thirteen basic schools had changing rooms. The other type of programme was found in the central circuit, where older girls were given Girls' Iron–Folic Acid Tablets Supplementation (GIFTS) on Wednesdays. More than fifty (50%) of the changing rooms for girls were not in use. And less than 20% of the changing rooms were furnished per the standards of the WinS Module. None of the schools had separate bins with covers for sanitary pad disposal.

Plate 4: Showing the changing room for girls and the various components

A. changing room B. hooks C. WaSH basin

4.6.8 Handwashing

Handwashing facilities (100%) were found in all schools, covering both in the Washrooms and handwashing stations in or near the class rooms or on the compound. All schools had handwashing facilities before COVID-19. Seventy-nine (79%) of schools confirmed that their teachers had received training in the use, operation, and maintenance of all school WASH facilities, and seventy-one percent indicated that the children had received training too.

Hygiene was taught as a component of the core curriculum (e.g., in science classes) (100%), through school-sponsored extracurricular programmes (e.g., sanitation clubs) and sporadically, informally, or occasionally as and when they had the opportunity (50%). Some schools also reported having clubs for hygiene education, but due to COVID-19, these clubs were not very active.

Handwashing with soap (or ash) was mentioned by 92% of those polled as an important part of the hygiene lesson. There were two main types of handwashing facilities found in the schools; foot operated, which was found in one school in the northern circuit, and hand operated handwashing facilities found in all schools. These handwashing facilities can further be grouped into standing pipes, sinks with or without running water, and veronica buckets. More than 70% of the veronica buckets had soap. Standing pipes (14%) and sinks (29%), on the other hand, had less soap. All schools had veronica buckets and standing pipes, and thirteen (13) schools had hand sinks. Only fourteen percent (14%) of the schools had age-appropriate handwashing facilities.

Twenty-one percent (21%) of the schools had a specific time for handwashing, and another twenty-one percent (21%) of the schools indicated that there was no formally established time where pupils washed their hands. Three schools reported that there were specific times students voluntarily chose to Wash their hands, for example after playing or in the morning when they arrived at school.

The most abundant (64%) mode through which students were encouraged to talk about or demonstrate good hygiene practises at home was through the hygiene lessons and/or education materials.

All the schools had running water from a piped system or tank (such as a faucet and sink, or a standpost, or a rainwater tank with a faucet), although storage drums with vessels to fetch water were observed at some places within the schools. There was no record of handwashing facilities where students had to wash their hands in a bowl or vessel with stagnant water. **Plate 5**

Plate 5: Showing Handwashing station where student had to fetch water to WaSH their hands.

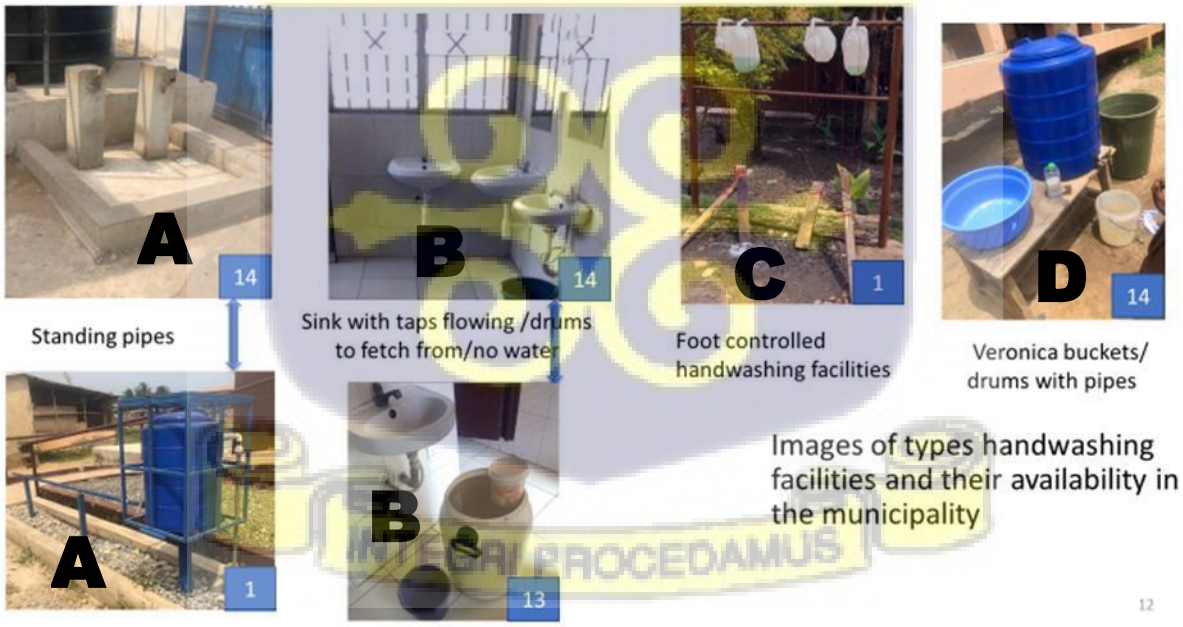


Plate 6: Showing the types of handwashing facilities found in the schools and the number of schools in which they were found.

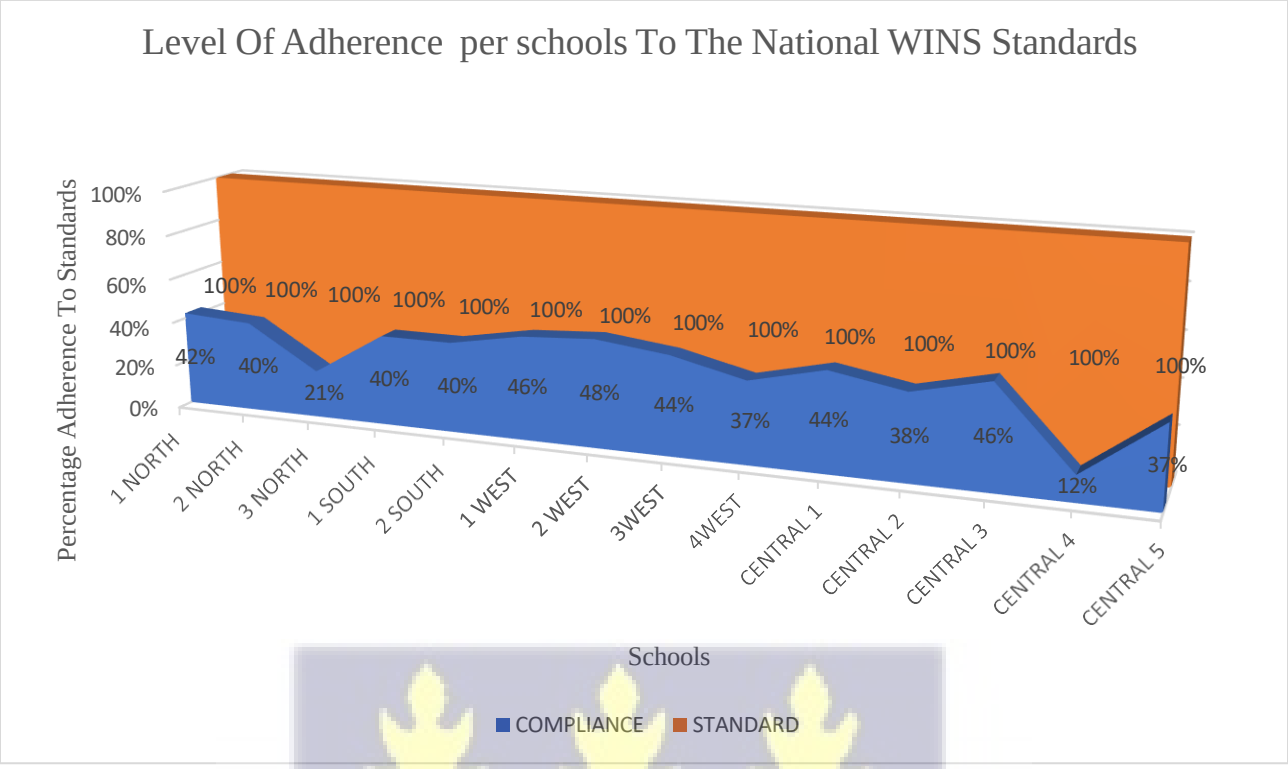
A. Standing pipes B. Sinks with or without running water C. Foot-controlled handwashing facility (tippy tap) D. veronica buckets

Maintenance And Repair of WASH Facilities

All the schools recorded that they had the primary responsibility of operating, maintaining, and repairing all WaSH facilities unless it was a major repair and needed the intervention of the Assembly or Education Directorate of the Municipality. Two schools belonged to a body that also assisted in maintenance and repairs that were beyond their capacity (Western Schools).

4.7 Adherence to WinS Guidelines

Over all, the mean level of compliance of the schools to the national WinS module was thirty-eight percent (38%). The highest levels of compliance for any school were found in the western circuit, with forty-six (46%), forty-eight (48%), and forty-four (44%) representing 1 West, 2 West, and 3 West, respectively, which was below average. The lowest levels of compliance were found in the northern and central educational circuits, with twenty-one (21% and twelve (12%) percent, respectively. The mode and median levels were both forty percent (40%) of the school's level of compliance fell within the range of thirty-seven to forty-six (38%-46%). Looking at the individual standards, all the schools failed to adhere to the national water standards for WinS (0%). The next weakest level of compliance was with waste disposal (21%), followed by adherence to urinal standards (40%). In all schools, there was zero percent (0%) compliance to the urinal standards in the WinS module. The strongest adherence was seen in hygiene (80%) and toilet standards (60%) as seen in figure 4.11 below.



4.8 Enabling and limiting factors to National WinS Module

Nine (9) hindering factors and six (6) enabling factors were identified for the adherence to the National WINS implementation module. The hindering factors were student damaged facilities (100%), no power to charge for services (100%), limited funding (100%), non-payment of the 20p per day maintenance fee (64%), pressure on WASH facilities (86%), poor quality of handWaSHing facilities (100%), while COVID-19 (100%), hygiene education (100%), and assessment of WASH (64%) were the highest recorded reasons for adherence.

Table 7 table showing enabling and limiting factors of WinS

Hindering Factors	Number	Enabling Factors	Number
1. Some school had not received intervention	2	**1.** COVID 19 promoted hygiene practices	14
2. Student were not paying the 20p per day for maintenance of facilities and schools were not allowed to force students to pay	9	**2.** Some schools were under other organization that supported the school in meeting the WaSH needs	3
3. Student damaged facilities	14	**3.** Active leadership	3
4. Pressure on WASH facilities	12	**4.** Assessment of WaSH	12
5. Poor quality of handwashing facilities	14	**5.** Clubs for awareness creation	9
6. School did not own property and hence community did not approve of construction of WaSH facilities	2	**6.** Hygiene taught in school	14

7. Poor planning and	4		

construction			
6. WASH Not included in school self-assessment plan	2		
7. Communities stole and damaged WASH infrastructure/ accessories	3		
8. Limited funds	14		
9. COVID-19	14		

CHAPTER 5
DISCUSSION

Between 2012 and now, intense efforts and investments have been made to provide safe and sustainable drinking water and sanitation for all, especially in developing countries. These improvements in water sanitation and hygiene have resulted in children in basic schools having access to a more inclusive and equitable quality of education. For this reason, the study sought to assess WASH in basic schools in the Ledzokuku Municipality in a national and global context. This chapter discusses the findings that supported the assessment of WASH in schools in LeKMA.

5.1 Status of Water Sanitation and Hygiene and possible impact

From the results of the interactions with respondents, observation of WASH facilities and review of literature on the projects by LeKMA to supply water, sanitation and improve hygiene, the number and quality of WASH infrastructure in the schools have significantly improved. The facilities are more gender inclusive, better adapted to support a larger number of pupils than before, more disability-friendly and have a regular supply of water as than before. The implications of this could mean an improvement in school attendance, health and cognitive development, positive long-lasting hygiene behaviours, outreach to families and communities through the participation of pupils in hygiene promotion, and greater girls' participation in school, which are the expected impacts of the National WinS module. (GES, 2014).

Water is an important contributor to adequate WASH. The studies revealed that the main source of water for the schools was pipped water, with boreholes and rainwater covering an extremely low percentage. This is contrary to a study by Tiswan (2016) that identified boreholes as the most common. However, this can further be due to the fact that LeKMA is more urban than

Zabzugu and water coverage is better in Accra, the capital of Ghana.

A study by Freeman et al. (2012) asserts that school WASH improvements can improve school attendance for girls. The gender parity index, which is a ratio of girls to boys, can be used as an indicator of equity in schools. Literature reveals that the gross GPI for primary schools in Ghana as of 2019 was 1.01 (Tradingeconmics, 2021), indicating equity among boys and girls in Ghana. As of 2013 it was 1 (UNSD, 2015) and between 2016 and 2020 it has been 1 (Sasu, 2021). According to UN statistics, Ghana's GPI for primary schools increased from 0.84 to 1 between 1990 and 2014 (UNSD, 2015), so the municipality's GPI of 1.02 fits within this pattern and range.

The data on the GPI for Ledzokuku shows that overall, there were more females in JHS than males, with that same trend running down to KG, although the extent to which it differs decreased. This means females were slightly more favoured than males. This is expected as the 2021 censor shows there were more females than males (Ghana Statistical Service, 2021). Again, this could potentially be due to the improvement in WASH and the facilities' being more gender- inclusive or meeting the menstrual and privacy needs of girls Freeman et al. (2012). Furthermore, while WASH interventions help to reduce gender disparities, they are unsure of what specific mechanisms contribute to this.

The intervention sought to make the schools more gender-inclusive by carrying out safe menstrual hygiene education in all schools and providing the needed infrastructure. However, there was no provision for menstrual bins. Also, changing rooms were either absent, partially furnished, or not in use. This could lead to girls missing school during their periods as the environment to facilitate meeting their menstrual needs was inadequate, as seen in the "Global Review of Sanitation System Trends and Interactions with Menstrual Management Practices" (Kjellén & Fogde, 2012).

The Inclusive WASH facility is expected to increase enrolment and attendance of children with

physical disabilities. In Ghana, the Education Strategic Plan 2010-2020 set a strategic goal to "provide education for those with physical and mental impairments, orphans, and those who are slow or fast learners, by including them, wherever possible, within the mainstream formal system or, only when considered necessary, within special units or schools" (Ministry of Education, 2013). The study revealed that the number of students with physical disabilities was very low as compared with the national value for children with physical disabilities for children between the ages of zero (zero) and fifteen (15) from the 2020 disability report (Ministry of Education, 2013). This could either mean the number of children with physical disabilities was very low or that children with physical disabilities were not being sent to public schools as indicated by UNICEF (UNICEF, n.d.).

Pivik et al. (2002) explain that facilitating inclusive school environments requires ensuring physical access, without which students with disabilities are denied full participation and an equitable educational experience. Based on this assertion, the low number of children with physical disabilities in school could be attributed to school buildings not being disability- friendly, although most WASH facilities are, to some extent, disability-friendly.

The WASH interventions led to improvements in the quality of WASH facilities. All the schools in the municipality either did not have washrooms or the state of these washrooms was poor. However, with the construction and rehabilitation of existing facilities, the quantity and quality of the WASH facilities have greatly improved. Nemes, (2014) also came to the same conclusion that WASH intervention led to the construction of standard and durable toilets for pupils. All schools that did not receive any intervention still have unimproved toilets and urinals, or none at all, which could serve as a limitation to quality education as discussed in literature.

5.2 Access to WASH facilities

McMichael (2019) says that "access to WASH facilities and hygiene behaviour change education in schools contribute to inclusion, dignity, and equity." The study discovered that a number of basic schools tried to achieve accessibility by having all toilets on the school compound and not too far from the school buildings. This is also likely to contribute to the safety of the children as they will be in a safe place (school) where there is supervision or control that could endanger the child as compared with outside the school where the threats are numerous.

Tiswin (2016) indicated that "20 (80%) of the schools had access to sanitation facilities and 9 (36%) had safe drinking water." This study found that 13 (93%) had access to sanitation facilities and safe drinking water (although they did not drink it). This can be supported by the national situation where an increasing number of people get their water from improved sources and a few from unimproved sources (UNICEF & WHO, 2021).

Adequate and safe drinking water and inadequate sanitation are said to be important contributors to a decreased disease burden (Migele et al., 2007). The rate of flow of water in the schools generally seemed to provide adequate water for the schools, as only one school that did have water flowing through their taps often seemed to have water concerns. This is a good indication of the improvement in water coverage and supply as the various interventions included connecting schools to the national water supply grid.

Again, we can be sure that students will not spend their time in search of water and that the hygiene situation will improve as children are more likely to have water for handwashing and flushing. It was of great concern that none of the schools assessed their water or treated it, but this was understandable as they did not drink the water. Never the less, a fair idea of the water quality in their storage vessels could help them make informed decisions. Moreover, should a disaster strike,

it will be prudent enough to know that the water is safe to drink.

Tadesse et al. (2008) share that "good solid waste management involves the sequential hierarchy of source reduction, reuse, recycling, and safe disposal." The main methods of solid waste disposal were burning and burying, which are improper methods of waste disposal. This could be attributed to the poor institutional arrangements for collection and disposal services.

Although the schools indicate burning is done after school so the children are not harmed, burning has negative impacts on the environment (*Environmental and Health Impacts of Open Burning | Wisconsin DNR*, n.d.). Burning of waste is said to release harmful substances like dioxins, mercury, furan and polychlorinated biphenyls into the environment. These pollutants linger for a long time and have the tendency to bio-accumulate and are absorbed indirectly through food and water (Bill et al., 2015). The alternative, burying them, equally has a harmful impact on the environment (Bill et al., 2015). The study revealed that the schools that did not burn did so because the community in which they were situated frowned on burning.

Despite the fact that all schools were aware of the damage they could be doing and knew that the GES did not approve of such methods, the schools did so because they could not afford to have them properly picked up by waste collectors. The waste segregation observed in some schools indicates the awareness of and promotion of waste segregation and value from "waste".

A well-planned institution needs to have adequate structures to support it. The lack of adequate infrastructure, such as storm water drainage, observed in the study could limit the free flow of water and cause severe environmental problems such as flooding (Karley, 2009). Moreover, with the changing climate observed, the low-lying nature of Accra, as well as its being a coastal community, the impact of a flood could be disastrous. Again, stagnation of water could breed mosquitos.

It is important to note the role of the National WinS intervention in meeting the WASH needs of schools in LeKMA. The finding revealed that all the public schools that had received interventions received them after 2014 and all the schools prior to the interventions had very poor WASH facilities. This pushed the municipality to secure funding to roll out the WASH interventions for the various schools.

4.7 Challenges To WASH Interventions

There were a number of challenges to implementing interventions to improve the state of water supply, sanitation, and hygiene in schools.

Community Interference Due to No Land Community interference was one of the challenges to the implementation of WASH interventions in schools. It was observed that some schools that were put up on other institutions' land had not received any form of intervention. This was due to the fact that when the municipality attempted to obtain WASH facilities for the school, the community/institutions whose lands the schools were built on refused to allow the facilities to be built. This resulted in the poor washroom conditions of the school and the municipality's failure to meet its target of 100 percent coverage for toilets.

5.2.1 **Funding**

A possible contributing reason was a lack of funding (Antwi-Agyei et al., 2017). Schools recorded insufficient budget allocations from the government, as was the case in Olukanni

(2013), where schools attributed poor WASH in the public secondary schools to insufficient budget allocations from the government and other factors. The study also revealed that, as a measure to ensure the sustainability of the GAMA WASH initiatives as agreed on by the school, parents, and municipality, students had to pay a maintenance fee of 0.20 Ghana cedis per day. However, payment was a shortcoming, and the school had no power to ensure that children paid the said amount due to government policies. Leading to the limited ability of the schools to provide the necessary quality, maintenance, and repair of WASH facilities and services.

5.2.2 **Noncompliance with Guidelines and Protocol**

The national module for WinS in schools indicates the process intervention should go through from planning to the conception of intervention. However, it was observed that the process of application to appraisal stipulated in the module was ignored. This could, in the long run, reduce the expected impact of the intervention while hindering the sustainability of the project, as shared by Morfaw, (2014)(Morfaw, 2014).

5.2.3 **Inadequacies in Monitoring and Evaluation Systems**

The study also observed weak monitoring and evaluation systems as a contributing factor to the WaSH challenges. Olukanni (2013) also observed monitoring and evaluation as weaknesses in WASH implementation. This could be due to the fact that monitoring and evaluation culture in the Ghana is not the best and due to the members and the municipal Assembly members lack of deliberate effort to encourage engagement from grassroots stakeholders and the bad attitude of community level stakeholders toward monitoring and evaluation of projects and programmes, stakeholders were rarely involved in M&E of projects and programmes(Sulemana et al., 2018). Olunkanni further added that this, combined with limited evidence- based data collection and documentation, which are important for improved sector advocacy, hindered implementation.

(Olukanni, 2013).

5.2.4 **COVID-19**

COVID-19 acted as a hindrance to drinking water. This was because the virus could be present in saliva or left on the surface of the cups if the hands had come into contact with the virus (Hanes, 2020). Thus, schools that previously provided cups for students to drink no longer did; all students were encouraged to buy or bring water from home. Again, due to COVID-19, most of the activities of the clubs have been put on hold to reduce the chances of spreading infection, as minimising social gathering and interaction was one of the precautions to reduce the spread of the disease.

It also acted as an enabling factor in the sense that more handwashing stations were provided, a greater awareness was created, and handwashing with soap and surface cleaning practises were increased.

5.2.5 **Inadequate WASH infrastructure and services**

Although WASH in schools is considered essential, the limited number of WASH facilities, as seen in the high dependence of students on toilets or urinals, was very poor despite the numerous interventions to improve the situation. Due to the high pupil-to-toilet ratio, some facilities had to be shared. Approximately half of the schools were classified as limited service, implying non-single sex use. A paper by Cheok, et al., (2007) showed that layout design changes influenced perceptions of privacy, security, and comfort (Cheok, et al., 2007)). This situation could again lead to absenteeism in both boys and girls at all school levels. More work needs to be done to decrease the pupil-to-toilet ratios as most schools did not meet the 1: 50 ratios.

Again, some schools locked or closed down some facilities because they assumed they had more

than enough facilities and also did not want to get overwhelmed. The numbers, however, show that this was not appropriate, as even if all of the facilities were operational, they may still fall short of the 1:50 ratio. The safety and health of the children need not be compromised.

The sharing of toilet facilities is likely to have an impact on usage of both sexes, especially girls, which will defeat the purpose of providing safe WASH facilities to promote attendance and literacy (quality education), as seen in a paper by Adukia (2014). This is supported by the World Bank 1985 survey; Burra et al., 2003; and WaterAid India, 2008 (Burra et al., 2003; Perrett, 1985; WaterAid India, 2008) For example, the pre-primary levels.

For the school that had not received any intervention after 2014 but had a toilet, the state was so bad that there were no doors to the toilets and both sexes shared it. This could hinder girls from using them, especially during their periods, and could lead to absenteeism. The state of cleanliness was very poor, increasing the chances of infection with water barely flowing into the facility. The other school without intervention had no toilet at all. This puts the children at risk of accidents, kidnapping, domestic violence, molestation, and much more.

All the schools had janitors. However, about fifty percent (50%) of the schools were not clean from observation and comments made the Janitors are overwhelmed and underpaid. This could partly be the reason for the state of cleanliness. Schools that had one janitor per toilet facility observed better conditions. Studies have shown that if there is a lack of access to clean toilets or toilets, people will eat less in order to avoid going to the toilets. This could lead to malnutrition or constipation.

5.3 Opportunities

There were many factors that contributed to the improvement of WASH in schools in the municipality. These are discussed below.

5.3.1 **Interventions**

There was an improvement in making the WASH facilities inclusive for children with physical disabilities and girls. All the newly constructed toilet facilities had disability-friendly toilets, with some having rails and rumps to make the facility easy to access. Improving WASH systems in schools, as said by Redman-MacLaren et al. (2018), is a key intervention to increase all children's prospects for healthy development.

All the schools had separate urinals for each sex, but one school had no urinals at all. Although schools had single-sex urinals, some urinals within the schools were not single-sex. As seen in a study by Venugopal et al., 2016, the absence or sharing of urinals can lead to ladies holding their urine for long periods of time, which can have negative health consequences such as dehydration (Venugopal et al., 2016).

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5.4 Compliance With National Winning Standards

"The modern and globalised world cannot exist without standards which support cooperation, trade, health, safety, and economic growth." This was written by (*Standards and Their Importance for Organizations – IspatGuru*, 2017**)**. Furthermore, standards play a critical but frequently overlooked role, as seen in some instances in this study. In other instances, these were overlooked not deliberately but due to a number of limiting factors that made it impossible to follow the WinS guidelines stipulated in the national module. This is a common misunderstanding.

As observed, five main reasons for decreased adherence to WinS standards come from how the

infrastructure was built, the school management, children and parent attitudes, practises and behaviour, a lack of monitoring and evaluation on the path of the municipality and government policies and directives (e.g., fee education). A mean of 38% compliance is an indicator of some improvement in WASH in primary schools, though much more work is required to achieve 100% compliance by all stakeholders.

A study by Nemes (2014) revealed that a challenge to the implementation of the school WASH programme was found to be an inadequate number of toilet holes, which was found to be true in this study.

Another way of ensuring the sustainability of any intervention is to create an enabling environment to foster a change in people's values, beliefs, and attitudes from previously held ones that were not compatible with the intervention to ones that are compatible with the current interventions. This could be done through training, community engagement, and awareness- creation. The study observed that there were a significant number of schools with health clubs or WASH-related clubs. This could serve as an indicator of effort to instil better WASH practises in pupils and influence people outside the school.

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This chapter ties together the salient points derived from the assessment of water sanitation and hygiene in basic schools in the Ledzokuku Municipal Assembly.

A. Explore the current state of WASH in basic schools in the municipality

A lot more work needs to be done in the area of WASH. Although WASH coverage across the municipality has increased, they barely meet the standards of student to facility ratios. Again, the municipality missed their target of reaching all the schools with hygiene and sanitation systems by 2015 since it was evident that some schools had not received intervention.

All but one school had access to portable water. Over all, the number of female representations in school had increased, a likely indicator that efforts to improve WASH and girl child education had yielded some results. Owing from the fact that many studies had shown that girls' education is most likely to be hindered by WASH as compared with boys, especially based on the culture where girls mainly play the home-keeping roles. This was further strengthened by the presence of changing rooms for girls. Sadly, most were not in use. Additionally, some effort has been made to make schools disability- friendly, although the population of pupils with physical disabilities is very low. An indicator that more work needs to be done to encourage parents to send their children with physical disabilities to school. Toilet facility usage was generally high, and most schools exceeded the maximum ratio of students to toilet facilities. All new facilities had sinks, though less than half of the taps in the facilities were operational were made with easy-to-clean materials and had janitors present to facilitate cleanliness. This was, however, not enough to ensure the cleanliness of the school's washrooms. Evidence of hygiene promotion, especially due to

COVID-19, was visible. Maintenance and operations were done by the school. However, there were many challenges to effective maintenance and operations. Water and hygiene service in most schools undoubtedly fell within the basic service ladder of the JMP 2018 report. However, sanitation fell within a significant number of schools within the limited service as some facilities were still shared by both sexes.

B. Ascertain the extent to which basic schools in the municipality are adhering to the WinS National Implementation Module guidelines by the GES.

Adherence to the national implementation of WINS was below average, which could account for the weakness in the success of WinS. Again, the procedures to follow to get interventions were not followed at all, but in terms of how the interventions were constructed in the schools, there was a great level of compliance.

C. Identify challenges to adherence to the WinS National Implementation Model in the schools in the municipality.

The greatest hindrances to WASH in schools across all the educational circuits were student damaged facilities, no power to charge for services, limited funding, COVID-19.

6.1.1 Methodological Restrictions

The study only focused on management's perspectives and not on schoolchildren's perspectives of the use of the WASH facilities in schools. Only public schools were assessed. However, the initial plan for the study was to compare public and private schools in LeKMA and other municipalities, but due to time constraints and inadequate financial support, COVID-19 and the challenge of getting private schools to participate, Again, the municipality was a newly formed municipality and accessing some information proved to be a challenge as they were reorganising themselves.

Some stuff in schools, the GES directorate, and the municipality were new, making deriving information on past situations difficult on the WASH intervention, schools, and municipality. There were also many disparities in the ways schools were grouped and managed across the educational circuits. Some facilities, as at the time of study, had been closed for various reasons. This is likely to have yielded different results in future studies.

6.2 Recommendations

- Further studies should be conducted on the impact of WASH interventions and the dynamics and specific mechanisms that elicit a positive impact or no impact.
- The capitation grant allocated to schools needs to be reviewed to meet the school's needs.
- The municipality should see to it that WASH facilities are constructed as they should be. More work needs to be done by the municipality to secure funding to support the WASH initiatives and reduce the financial burden of the schools, as the schools are not allowed to charge the students.
- The municipality needs to have a soft copy of documents to make access to information easier to access. The information on their websites equally needs to be updated to give
- For the sake of sustainability and efficiency, the GES must ensure the national implementation of WinS is adhered to, especially in facility planning and management and monitoring, operation and maintenance.
- The GES and municipal environmental health officer should ensure that the schools use the facilities as intended to be used.
- The GES and schools should create awareness about the use of changing rooms.
- Schools must put in more effort to encourage good hygiene practises amongst students and prioritise WinS, as poor WinS can frustrate or cripple their efforts to achieve quality

education.

- More interventions are needed to meet the WinS guideline standards.
- The standards need to be reviewed to cover WinS in times of emergencies or disasters, especially with the adverse impact of climate change today.
- More community engagement needs to be done to secure space to put up WASH facilities for schools that do not have any.
- Schools should monitor and ensure that soap and water are available at hand-washing stations and changing rooms. They need to desist from using changing rooms as storage areas, as these facilities were designed to meet the menstrual needs of girls.
- As a way to promote positive behaviour change towards WASH, schools incorporate nudges in the school design, especially when new interventions are rolled out in basic schools, as seen in the study by Dreibelbis et al. (2016) (Dreibelbis et al., 2016).

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ANNEX

Appendix one

Checklist guide for water sanitation and hygiene in basic schools

(Take videos and pictures of the following)

Gps of school				
Entire WaSHroom				
Toilets				
Urinals				
Changing rooms				
Hand WaSHing facilities				
Soap				
Hand WaSHing				
Drainage/ soak away				
Source of water				
Water Storage containers				
Menstrual bin				

Floor materials Roof				

Cleaning schedule				
Waste disposal site				
Disability ramps				
Child friendly				
Disability friendly				
On sight sanitation system				
Year of provision of toilets				
Locks behind toilet stalls ladies				
Drinking water containers				

Appendix 2

interview guide final print

Introduction

Date

yyyy-mm-dd

Respondent

- ◯ Head teacher
- ◯ Head mistress
- ◯ School SHEP coordinator
- ◯ teacher
- ◯ Circuit Supervisor
- ◯ Other

if Other?

school circuit

- ◯ North
- ◯ south
- ◯ Central
- ◯ West
- ◯ i don't know

school or cluster

- ◯ school
- ◯ cluster

name of school / cluster

number of schools in cluster

pre- primary no.

primary no.

_____

JHS no.

_____

school type

- ◯ Day
- ◯ Boarding

number of shifts

_____

School level

- ☐ pre- primary
- ☐ primary
- ☐ Junior High School

Are they all on the same premises

- ◯ yes
- ◯ no

Do they share the same WASH facilities?

- ◯ Yes
- ◯ No
- ◯ other

student population

_____

number of girls

_____

number of boys

_____

number of students with physical disabilities

_____

number of male teachers

_____

number of female teacher

_____

Does the school have a parents teachers association?

- ◯ yes
- ◯ no
- ◯ other

if Other?

_____

Does the school have some formal institutional link to the community or other parent/ community organization *management commitee*

- ◯ yes
- ◯ no

name of institutional link to community other parent/ community organization

_____

Does the school have a student led organization eg. clubs?

- ◯ Yes
- ◯ No

Does the school have a student led organization that supports WASH?

- ◯ Yes
- ◯ No

is there an annual process of school self - assessment(SSA) and/ or School Improvement plans (SIP) ?

- ◯ yes
- ◯ no

water

Is Water Sanitation an Hygiene included in the SSA or SIP?

- ◯ yes
- ◯ no

What is the school's main water source?

- ◯ Piped water into school building
- ◯ Piped water to school yard/plot
- ◯ Public tap/standpipe
- ◯ tubewell/borehole
- ◯ Protected dug well
- ◯ unprotected dug well
- ◯ Protected spring
- ◯ unprotected spring
- ◯ rainwater collection
- ◯ bottled water
- ◯ Cart with small tank/drum
- ◯ tanker-truck
- ◯ surface water (river, dam, lake, pond, stream, canal, irrigation channels) ◯
- no water available in or near school

if other?

_____

What is this water source used for?

- ☐ Drinking
- ☐ HandWaSHing
- ☐ Anal cleansing after defecation
- ☐ flushing or pour-flushing toilets
- ☐ Cooking
- ☐ Any other purpose

if other?

_____

How often is the water source functional?

- ◯ 5-7 days per week
- ◯ 2-4 days per week
- ◯ fewer than 2 days per week

When the water source is functional, does it provide enough water for the needs of the school, including water for drinking and handWaSHing?

probe to see if it meets 5 ltr per person

- Yes
- No
- I don't Know

is there an acceptable alternative water supply available when main supply is not functioning?

meet drinking &hanw

- yes
- no

what is the alternative

_____

what is the alternative used for

_____

Do you treat water from the source you use at school in any way to make it safer to drink?

- always
- sometimes
- never

if other

_____

if water is always or sometimes treated, how is water from the school water source usually treated before drinking?

- boiling
- Chlorination (any kind, including the use of bleach)
- straining it through a cloth
- using a water filter (ceramic, sand, composite, etc.)
- solar disinfection
- letting it stand and settle
- other treatment method
- not applicable

Are drinking water storage containers properly covered?

- Yes
- no
- there are no storage containers for drinking

What vessel do children normally use to drink water?

cup, glass

- their own reusable drinking vessel
- A disposable drinking vessel (used one time only, e.g., a paper cup)
- A shared drinking vessel (e.g., a shared cup or ladle)
- Directly from the faucet or hand pump spout
- other
- non applicable

if other

_____

Are drinking water facilities accessible to children with physical disabilities?

- All
- Some
- None
- not applicable

what is the youngest Child's age?

_____

Can the youngest children in the school get drinking water by themselves?

- yes
- no
- Don't know

if other

_____

is the water quality periodically accessed?

- yes
- no
- sometimes

how is it accessed

_____

Sanitation

Does the school have any toilet facilities?

- ◯ yes
- ◯ no

how many WaSHrooms does the school have

_____

are the toilet for teacher's facilities

- ◯ shared
- ◯ seperated
- ◯ both

Are all the WaSHrooms in use?

- ◯ yes
- ◯ no

are the toilet facilities for student's

- ◯ shared
- ◯ seperated
- ◯ both

In general, how clean are the students toilet facilities?

- ◯ clean
- ◯ somewhat clean
- ◯ not clean

In general, how clean are the teachers toilet facilities?

observe

- ◯ clean
- ◯ somewhat clean
- ◯ not clean

What type of toilet facilities are there in the school?

observe and ask

- [ ] flush / Pour flush
- [ ] Pit latrine
- [ ] Pit latrine with slab
- [ ] ventilated Improved Pit latrine (VIP)
- [ ] Pit latrine without slab / open pit
- [ ] Composting toilet
- [ ] bucket
- [ ] Hanging toilet, Hanging latrine
- [ ] no facility, bush, field
- [ ] other

What facilities and programmes are there in the school for promoting safe and private menstrual hygiene for older girls?

- [ ] Menstrual hygiene education sessions for girls
- [ ] Private WaSHing facilities for cloth napkins (such as a tap and basin inside a lockable toiletstall) Private disposal/incineration facilities for disposable napkins
- [ ] Any kind of napkin distribution programme
- [ ] other
- [ ] none
- [ ] i don't know

if Other?

_____

Urinals

Does the school also have urinals?

observe

- ◯ yes
- ◯ no

how many Urinal structures do you have?

_____

are they

- ◯ separated for different sexes
- ◯ together
- ◯ both

Hygiene

Is hygiene taught at the school?

- ◯ yes
- ◯ no
- ◯ non applicable

have teachers received training in the use , operation and maintenance of all school WASH facilities?

- ◯ yes
- ◯ no
- ◯ non applicable

have students received training in the use , operation and maintenance of all school WASH facilities?

- ◯ yes
- ◯ no
- ◯ non applicable

How is hygiene taught at the school?

- ☐ As a component of the core curriculum (e.g., in science classes) ☐ As an integral part of a special module on healthy living/life skills ☐ As a stand-alone special module on hygiene exclusively
- ☐ Through school-sponsored extracurricular programmes (e.g., sanitation Clubs) only sporadically/informally/occasionally

Is handWaSHing with soap (or ash) a prominent part of the hygiene lesson?

- ◯ yes
- ◯ no
- ◯ partially
- ◯ Don't know

Is the importance of the use of soap (or ash) when handWaSHing stressed in the hygiene education material?

probe: discuss with informants but also a rapid on-site review of the hygiene education texts/materials available in the school - is it highlihted

- ◯ yes
- ◯ no
- ◯ partially
- ◯ Don't know

Is the importance of handWaSHing with soap (or ash) at immediately after defecation and before eating stressed in the hygiene education material?

- ◯ yes
- ◯ no
- ◯ partially
- ◯ Don't Know

Is there a designated time period allotted for students to WaSH their hands before eating?

- ◯ yes
- ◯ No
- ◯ partially

Is there a designated time period allotted for students to WaSH their hands aside before eating?

- ◯ yes
- ◯ No
- ◯ partially

Are students encouraged to transmit hygiene knowledge to their families and communities?

- ☐ yes, through the hygiene lessons and/or education material that encourages students to talk about or demonstrate good hygiene practices at home
- ☐ yes, through regular school-sponsored outreach events (e.g., plays/songs on hygiene by students for parents visiting the school, community sanitation surveys conducted by students, etc.)
- ☐ yes, but only sporadically/informally/occasionally ☐
- ☐ no

Does the school have handWaSHing facilities?

- ◯ yes
- ◯ no

Does the handWaSHing facilities vary for different categories of children ?

- ◯ yes
- ◯ no

What kind of handWaSHing facilities does the school have

- ◯ running water from a piped system or tank (such as a faucet and sink, or a standpost, or a rainwater tank with a faucet)
- ◯ Hand-poured water system (such as from a bucket or ladle)
- ◯ basin/bucket (handWaSHing is done in the water, i.e. water is not running or poured)
- ◯ other

if other?

_____

How many handWaSHing facilities are there in the classroom?

_____

How many handWaSHing facilities are there on the compound but not close to the WaSHroom?

_____

How many handWaSHing facilities are there in the canteen?

_____

How many handWaSHing facilities are there close to the WaSHrooms?

_____

How many handWaSHing facilities are there in the the WaSHrooms?

_____

Do they all work?

- ◯ all
- ◯ None
- ◯ some

Are the handWaSHing facilities accessible to younger children

- ◯ yes, all facilities are accessible
- ◯ some are
- ◯ none are

is soap provided at the hand WaSHing stations

- ◯ yes, all facilities are accessible
- ◯ some are
- ◯ none are

Are the handWaSHing facilities accessible to children with physical disabilities

- ◯ yes, all facilities are accessible
- ◯ some are
- ◯ none are

Did you have hand WaSHing facilities before COVID-19

- ◯ Yes
- ◯ no

Did you have hand WaSHing facilities before COVID-19 separate from those in the WaSHrooms

- ◯ Yes
- ◯ no

the number of hand WaSHing facilities have

- ◯ increased after COVID -19 by more than 5
- ◯ Have remained the same as before COVID -19
- ◯ other

what was the number of hand WaSHing facilities before 2020(COVID)

_____

how many handWaSHing facilities did you have before 2014

_____

Waste Disposal

How is solid waste (garbage, rubbish) disposed at the school?

ask and observe

- ◯ thrown on a garbage dump within or near the school grounds
- ◯ buried within or near the schools' grounds
- ◯ burned within or near the school grounds
- ◯ Collected and taken away by a waste disposal service
- ◯ other
- ◯ i don't know

if other?

_____

How often is solid waste disposed of or collected?

- ◯ At least once a day
- ◯ between once every two days and once a week
- ◯ less frequently than once a week
- ◯ other
- ◯ Don't know

if other?

_____

is there any form of waste segregation?

- ◯ yes
- ◯ No

what kind of waste segregation is done

_____

Does the school have an on-site sanitation system (pit Laterite, composting toilet, septic tank)?

- ◯ yes
- ◯ no
- ◯ Don't know

is there a schedule for emptying and disposing of the sludge?

- ◯ yes
- ◯ no
- ◯ Don't know

Is the sludge disposed of safely?

; try to find out where the sludge is dumped: if it is simply dumped in an open garbage pit, in a vacant lot, in a stream, etc

- ◯ yes
- ◯ no
- ◯ partially
- ◯ Don't know

Does the school have a drainage system for removing waste water from the school grounds?

probe; drainage should include provision for removing storm water, 'grey water' from handWaSHing stations, waste drinking water,

- ◯ none
- ◯ all
- ◯ some
- ◯ only a partial or incomplete system

if partially why?

_____

if yes, is drainage system functioning

probe; drainage should include provision for removing storm water, 'grey water' from handWaSHing stations, waste drinking water,

- ◯ none
- ◯ all
- ◯ some
- ◯ only a partial or incomplete system

Operation and Maintenance

To the best knowledge of the school Principal, what entity has the primary responsibility for maintenance and repair of the school's water system?

which body has the primary responsibility, whether or not it is successfully maintaining the system

- ◯ the Ministry responsible for water supply ◯
- the District or Municipal authorities
- ◯ the Ministry of education
- ◯ the school itself
- ◯ Another body
- ◯ school Principal doesn't know who is responsible

if other

_____

To the best knowledge of the school Principal, what entity has the primary responsibility for operation of the school's water system?

- ◯ the Ministry responsible for water supply ◯
- the District or Municipal authorities
- ◯ the Ministry of education
- ◯ the school itself
- ◯ Another body
- ◯ school Principal doesn't know who is responsible

if other

_____

. In the opinion of the school Principal, are the school water facilities operated successfully?

- ◯ yes
- ◯ no
- ◯ Partially
- ◯ Don't know

If the water supply system is not functional or partially functional at the time of the visit , what are the main reasons?

probing

- ☐ unclear responsibilities for operation and/or maintenance ☐
- Poor operation and/or maintenance practices
- ☐ lack of spare parts
- ☐ lack of operation consumables (fuel, electricity, etc.)
- ☐ Poor initial design of the system
- ☐ Age of system
- ☐ other (specify)
- ☐ Don't know

if other

In the opinion of the school Principal, are the school sanitation facilities successfully maintained, and repaired when required?

- ◯ yes
- ◯ no
- ◯ partially
- ◯ Don't know

if other

Within the school, who is responsible for cleaning the toilet facilities?

- ◯ Custodial/cleaning staff teachers
- ◯ students
- ◯ someone else
- ◯ Don't know

if other

Are cleaning duties assigned to students as punishment for misbehavior or poor performance

- ☐ Girls usually clean their own toilets
- ☐ boys usually clean their own toilets
- ☐ girls usually clean boys' toilets
- ☐ boys usually clean girls' toilets ☐
- girls usually clean teachers' toilets
- ☐ boys usually clean teachers' toilets
- ☐ other