

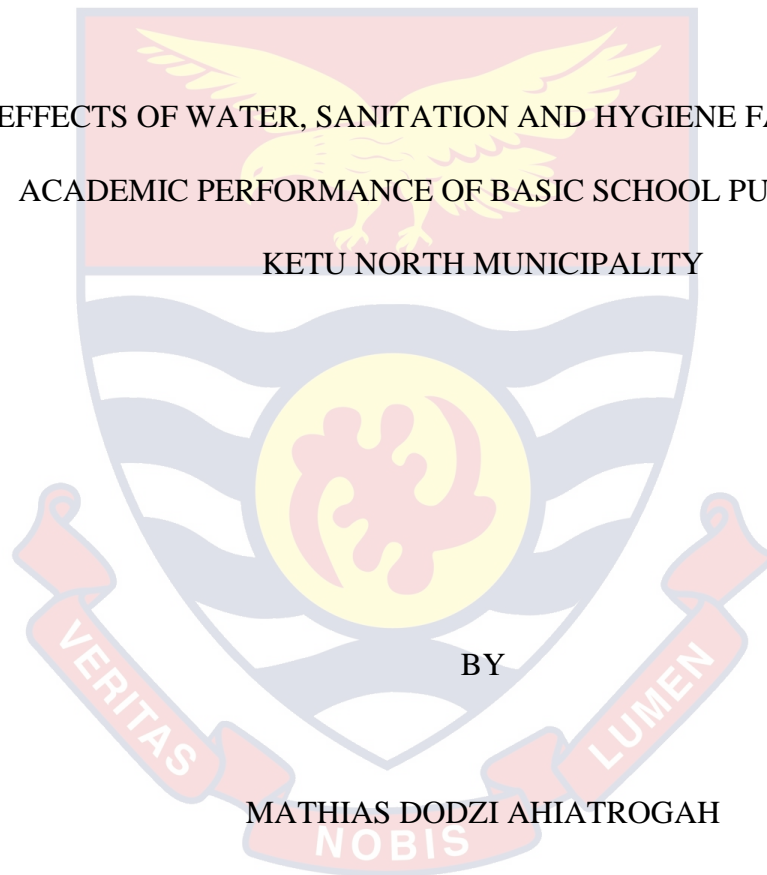
PRESBYTERIAN UNIVERSITY COLLEGE, GHANA

FACULTY OF DEVELOPMENT STUDIES

DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES

MANAGEMENT

EFFECTS OF WATER, SANITATION AND HYGIENE FACILITIES ON
ACADEMIC PERFORMANCE OF BASIC SCHOOL PUPILS IN THE
KETU NORTH MUNICIPALITY



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2020

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A Dissertation submitted to the Department of Environmental and Natural
Resources Management of the Faculty of Development Studies, Presbyterian
University College, Ghana in partial fulfilment of the requirement for the
award of MSc. Environmental Health and Sanitation

BY

MATHIAS DODZI AHMATROGAH

SEPTEMBER 2020

DECLARATIONS

Candidate's Declaration

I hereby declare that this Dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Name:

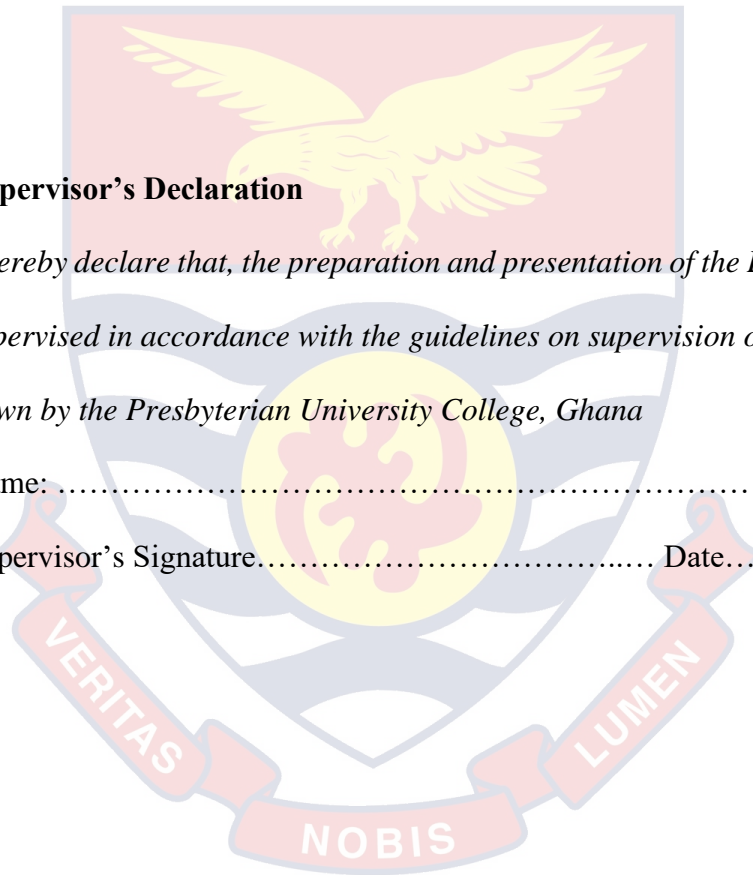
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Supervisor's Declaration

I hereby declare that, the preparation and presentation of the Dissertation were supervised in accordance with the guidelines on supervision of dissertation lay down by the Presbyterian University College, Ghana

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Supervisor's Signature..... Date.....



ABSTRACT

The study investigated the effects of water, sanitation and hygiene facilities on academic performance of Basic School Pupils at Dzodze in the Ketu North Municipality of the Volta Region. Through cross sectional survey, a total of 100 basic school pupils and 20 Teachers were sampled through simple random sampling and purposive sampling techniques. The findings of the study revealed that majority of the respondents 96 (96%) of the pupils stated that they had water and sanitation facilities in their schools. Most of the respondents 55 (55%) of the pupil stated they had pipe water as common sources of water in the school and as such most respondents 47 (47%) stated that, the state of water was good in the school. Most of the respondents 66 (66%) used KVIP toilet facility in their schools, 51 (51%) of them said their toilet facilities were in a good state, 98 (98%) have access to hand washing facilities in their schools, Veronica buckets 82 (82%) were predominantly used as the hand washing facilities in their schools. The presence of WASH facilities helped them to participate in academic activities 98 (98%) and teaching and learning activities 47 (47%). About 28 (28%) said they performed better in the end of term exams than previously while 27 (27%) stated they have become more active in class which is promising. Copying strategies include buying water from vendors 47 (47%), 49 (49%) used public sanitation facilities. There should be renovation of WASH facilities to get the facilities back to shape to make them more user friendly for the pupils.

ACKNOWLEDGEMENTS

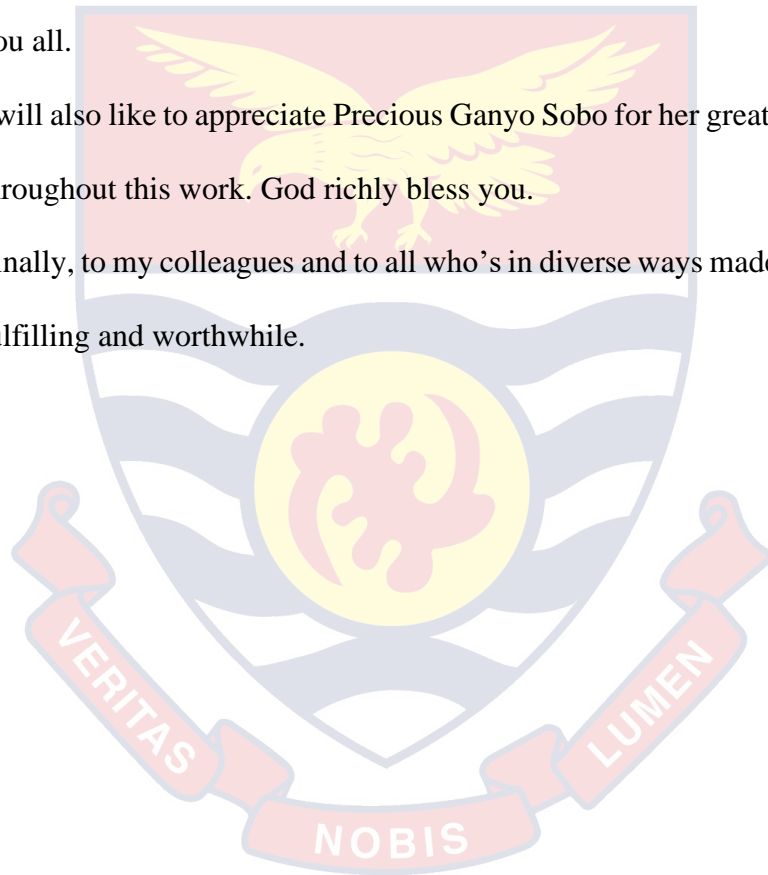
I would first thank the Almighty God for His grace that enabled me to embark on this research and seeing me through. Indeed, He who began a good work in me carried it on to completion.

I am very grateful to my supervisor, Dr. Richard Amfo-Otu whose support and guidance went a long way to bring this work into shape. God richly bless you.

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I will also like to appreciate Precious Ganyo Sobo for her great help and support throughout this work. God richly bless you.

Finally, to my colleagues and to all who's in diverse ways made the study period fulfilling and worthwhile.



DEDICATION

To my mother, Madam Otilia Akudzi



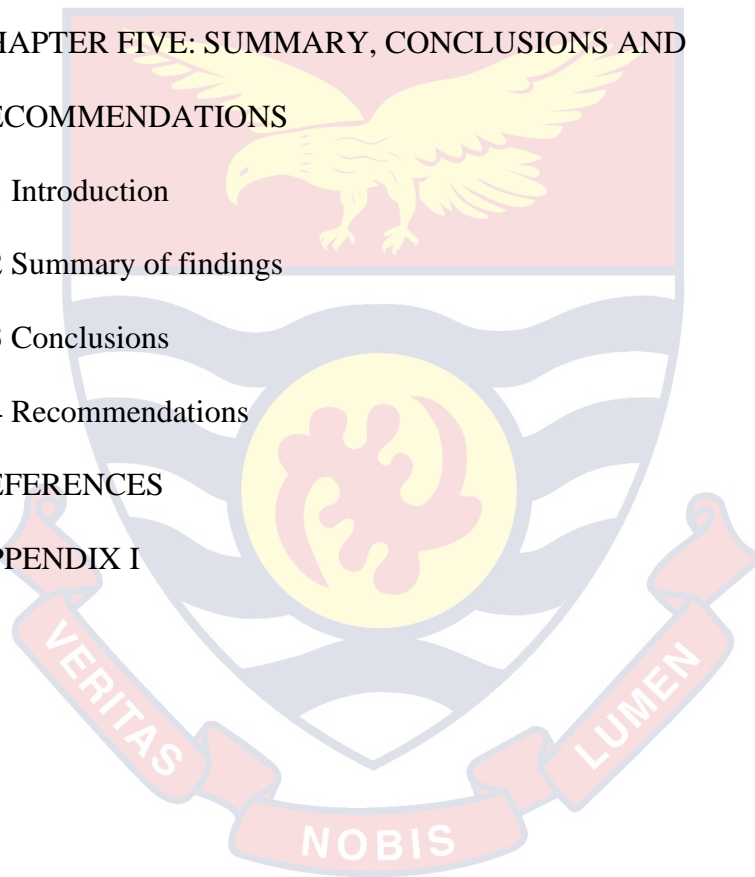
TABLE OF CONTENTS

DECLARATIONS	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
DEDICATION	v
TABLE OF CONTENTS	vi
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Problem Statement	3
1.3 Main Objective	6
1.3.1 Specific Objectives	6
1.3.2. Research Questions	6
1.4 Significance of the Study	7
1.6 Scope of Study	8
1.7 Limitations of the Study	9
1.8 Delimitations of the Study	9
1. Definition of Significant Terms used in the Study	9
1.8 Organisation of the study	9
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 The Concept of School Water Sanitation and Hygiene (WASH)	11
2.3 The concept of Sanitation	12
2.4 School Sanitation and Health	13
2.5 Sanitation and Pupils' Performance	15
2.6 Safe Drinking water and Pupils' Performance	17

2.7 Hand Washing and Pupils' Performance	18
2.8 Reduced Diarrhoea and other WASH-Related Diseases in School Students	19
2.9 Improved WASH Knowledge, Attitudes and Hygiene Behaviours	22
2.10 Reduced Disease Burden and Improved Hygiene Practices in Households and Communities	23
2.11 Improved Student Enrolment and Attendance	24
2.12 Hygiene Education and Pupils' Performance	26
2.13 History of School Health Education Programme (SHEP) in Ghana	28
2.14 The Importance of School Sanitation and Hygiene Education (SSHE) in School	29
CHAPTER THREE: METHODOLOGY	32
3.1 Introduction	32
3.2 Profile and Location of Study Area	32
3.3 Research Design Framework	33
3.4 Population and Sample Size of the Study	34
3.5 Sources of Data	35
3.6 Participant Sampling Techniques	35
3.7 Data Collection Instruments	36
3.8 Data collection Procedure	36
3.9 Research Ethical Consideration	37
3.10 Data Analysis	37
CHAPTER FOUR: RESULTS AND DISCUSSIONS	38
4.1 Introduction	38
4.2 Demographic of Respondents	38

4.2.1 Gender of Respondent	38
4.2.2 Age of Respondents	39
4.2.3 Class/Stage of Respondents	39
4.2.4 Number of Years in School	40
4.3 Types of Water, Sanitation and Hygiene Facilities in The Basic Schools	41
4.3.1 Water and Sanitation Facilities	41
4.3.2 Type of Water Available in Schools	41
4.3.3 State of Water Facilities	42
4.3.4 Type of Toilet Facilities	43
4.3.5 State of Toilet Facilities	44
4.4. Assess The State of the Water, Sanitation and Hygiene Facilities	45
4.4.1 Hand Washing Facility	45
4.4.2 Type of Hand Washing Facility	45
4.4.3 State of the hygiene facility	46
4.4.4 Water Availability for Sanitation and Hygiene	47
4.5 Effect of The Water, Sanitation and Hygiene On Pupil Participation in Academic Activities	47
4.5.2 Usage of Water, Sanitation and Hygiene Facilities	48
4.5.3 Extent of Respondents Agreement to WASH Helping in Academic Activities Participation	50
4.5.3.2 Entertainment Activities	50
4.5.3.3 Teaching and Learning Activities	51
4.5.3.4 Compound Cleaning Activities	52
4.5.3.5 School Gardening Activities	53
4.5.3.6 Performance of School Activities and Academic Performance	54

4.6 Coping Strategies Being Adopted by Pupil to Meet Their Water, Sanitation and Hygiene Needs	55
4.6.2 Water unavailability	56
4.6.3 Sanitation Facilities Unavailability	57
4.6.4 Hygiene facility unavailability	58
4.6.5 Effects of absence WASH facilities on academic life of Pupils	58
4.6.6 How unavailability of WASH facilities can be resolved	59
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	61
5.1 Introduction	61
5.2 Summary of findings	61
5.3 Conclusions	63
5.4 Recommendations	64
REFERENCES	66
APPENDIX I	81



LIST OF TABLES

Table 1: Gender of Respondents	38
Table 2: Age of Respondents	39
Table 3: Class/ Stage of Respondent	40
Table 4: Number of Years in School	40
Table 5: Water and Sanitation	41
Table 6: Type of Water Available	42
Table 7: State of Water	43
Table 8: Type of Toilet Facilities Available	44
Table 9: State of Toilet Facilities	44
Table 10: Hand Washing	45
Table 11: Type of Hand Washing Facility	46
Table 12: State of Hygiene Facilities	46
Table 13: Water Availability for Use of Hygiene Facilities	47
Table 14: Water Availability for Use of Hygiene Facilities	48
Table 15: Usage of WASH	48
Table 16: Activity Participation	49
Table 17: Sporting Activities	50
Table 18: Entertainment	51
Table 19: Teaching and Learning	52
Table 20: Teaching and Learning	53
Table 21: School Gardening	54
Table 22: School Activities Performed and Academic Performance	55
Table 23: Period of Unavailability of WASH Facilities in School	56
Table 24: Unavailability of Water Management	57

Table 25: Sanitation Facilities	57
Table 26: Hygiene Facility	58
Table 27: Effects of Absence WASH Facilities on Academic Life of Pupils	59
Table 28: Suggestions to Resolve Unavailability of WASH Facilities	60



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Water, sanitation and hygiene (WASH) are among the powerful drivers of human development as they affect quality of life at many levels including improved health, education and economic status amongst others (UNICEF/WHO, 2006). WASH facilities are therefore an important component of the modern-day school environment to provide learners the right condition to study and excel. Schools with adequate water, sanitation and hygiene (WASH) facilities have a reliable water system that provides safe and sufficient water, especially for hand-washing and drinking; sufficient number of toilets for students and teachers that are private, safe, clean, and culturally and gender appropriate; water-use and hand-washing facilities, including some close to toilets; and sustained hygiene promotion (Adams, Bartram, Chartier & Sims, 2009).

Facilities should cater to all, including small children, girls of menstruation age, and children with disabilities. WASH conditions in schools in many low-income countries, however, are inadequate with associated detrimental effects on health and school attendance (Jasper, Thanh-Tam & Bartram, 2012). An evaluation by UNICEF (2012) found that in schools in low-income countries, only 51% of schools had access to adequate water sources and only 45% had adequate sanitation. Globally, school-based WASH interventions variously aim to: (i) reduce the incidence of diarrhoea and other hygiene related diseases; (ii) improve school enrolment, school performance, and attendance; and (iii) influence hygiene practices of parents and siblings

whereby children act as agents of change in their households and communities (Morgan, Bowling, Bartram & Kayser, 2017).

In spite of the importance of good water, sanitation and hygiene in improving the health status of the people and children especially, sanitation services delivery has not been given the needed attention it deserves in most developing countries schools (USAID, 2008; Dujister *et al.*, 2017). As a result of this unpleasant situation, a greater proportion of children suffer from sanitation related diseases caused by poor water, sanitation and hygiene practices. One of the important factors that cause serious health impact is lack of access to clean water and poor sanitation (Murray & Lopez, 1997). Different pathogens can affect the body in many different ways likewise the ones causing water borne diseases such as cholera, diarrhoea, shigellosis (Enger *et al.*, 2013). Unsafe hygiene practices along with contaminated water and food is one of the main causes of child mortality across the globe (Katukiza *et al.*, 2012).

Poor water, sanitation and hygiene in schools impair children growth and development. It also limits school attendance and retention of students and negatively affects student's ability to concentrate and learn. About 40 percent of the World's 400 million school-age children are infested with intestinal worms (WHO/UNICEF, 2013). Of all the children between the ages of five and fourteen in the world, 87 percent live in developing countries. For these children, the risk of death is now fourteen times higher than for children of the same age groups in the countries in the global north. That risk can be reduced enormously when children stay in a healthy environment and get used to practicing good hygiene both in and out of school (WHO, 1995).

It has also been estimated that 1.7 million children face death each year due to unsafe water, poor sanitary and hygiene conditions (Freeman *et al.* 2014). Therefore, the provision of proper Water, Sanitation and Hygiene (WASH) facilities ensures improvement of wellbeing specifically with regards to protection of the body from various diarrheal vectors among children. In assessing the unpleasant global water, sanitation and hygiene situation with focus on Ghana, the case is not markedly different from other countries in the global south when it comes to school sanitation and hygiene as a lot of basic schools are without these hygiene facilities (Montgomery *et al.*, 2012). More than half of the primary schools in Ghana lack adequate water facilities and nearly two thirds lack sanitation. This affects their learning and lives (UNICEF, 2010).

Despite the inadequate WASH facilities in basic schools especially in rural Ghana, focus on changing the status quo has not been robust even though the consequences of the unavailability of WASH facilities is potentially dire on the health of the basic school pupils. It is against this background that this study seeks to assess the impact of WASH facilities at Dzodze in the Ketu North Municipality of the Volta Region with specific focus on the availability of WASH facilities, the state of the facilities as well as the impact of the use of the facilities on the academic performance of the basic school pupils.

1.2 Problem Statement

Sanitation and hygiene have become an important issue to the global world and the school context in particular. Inadequate/unimproved sanitation facilities, lack of safe drinking water, lack of proper hygiene especially for children, contribute to low attendance and poor performance (Tsinda *et al.*,

2013). Many schools in low-income countries have inadequate access to water facilities, sanitation and hygiene promotion. Inadequate water, sanitation and hygiene (WASH) facilities has been found to be a major cause of diseases world-wide. Improving access to these facilities is known to have a significant beneficial impact especially on the health and other aspects of human lives across communities. An institution which needs good WASH facilities to function healthily is the basic schools primarily because, they are predominantly composed of young children who are the most vulnerable when it comes to water, sanitation and hygiene related diseases and infections. However, effective hygiene and sanitation promotion is a major challenge for many low-income countries (Rheinlander, Samuelson, Dalsgaard & Konradsen, 2010).

Schools especially in rural and semi-rural areas often suffer from non-existent or insufficient water supply, sanitation and hygiene facilities, dirty and unsafe water supply; toilets or latrines that are not adapted to the needs of children particularly, unhealthy and dirty classrooms and school compounds among others. The World Health Organisation about two decades ago (2000) estimated that 88% of diarrhoeal disease is caused by unsafe water supply and inadequate sanitation and hygiene facilities. Many schools serve communities that have a high prevalence of diseases related to inadequate water supply, sanitation and hygiene, and where child malnutrition and other underlying health problems are common.

Under these conditions, schools become unsafe places where diseases are transmitted (WHO, 1997). Thus, children's ability to learn may be affected by inadequate water, sanitation and hygiene conditions (Cairncross & Valdmanis, 2006). This can contribute to poor health which can affect children's

ability to learn and may therefore influence their educational achievements and prospects in life (Faheem & Yasir, 2007; ICF Macro, 2010). A study by Nokes and Bundy, (1992) for example, established that children with worm infestations have lower marks in school than non-infected children. Basically, this means that children with heavy worm infestations begin at a disadvantage and have a slower start in the learning process; these children have only a few years of opportunity to benefit from a formal education. Issues of sanitation and hygiene therefore are of critical concern to every nation as a whole and to schools as far as education is concerned.

From the forgoing, it is abundantly clear that the availability and quality of WASH facilities in schools have a strong nexus to the academic performance of pupils as they are constantly exposed to pathogenic and non-pathogenic conditions in the school environment. It is against this backdrop that this study seeks to assess the effects of the WASH facilities on pupil's academic performance at Dzodze in the Ketu North Municipality of the Volta Region. This study needs to be conducted because there has not been much focus on WASH facilities and academic performance of pupils as most of the studies in this area focused mainly on the availability of the WASH facilities in schools. This study will therefore help address the knowledge gap that exist currently in literature on the subject matter of WASH in basic public schools and its effects on academic performance which this study seeks to explore and unearth.

1.3 Main Objective

The main objective of this study is to assess the effects of water, sanitation and hygiene facilities on academic performance of basic school pupils at Dzodze in the Ketu North Municipality of the Volta Region, Ghana.

1.3.1 Specific Objectives

The study specifically seeks to;

1. To identify the types of water, sanitation and hygiene facilities in the basic schools in the municipality.
2. To assess the state of the water, sanitation and hygiene facilities in the basic schools.
3. To examine the effects of water, sanitation and hygiene on basic school pupil's participation in academic activities.
4. To identify the coping strategies being adopted by pupils to meet their water, sanitation and hygiene needs.

1.3.2. Research Questions

This study aims to answer the following research questions:

1. What types of water, sanitation and hygiene facilities are available in the basic schools?
2. What is the state of the water, sanitation and hygiene facilities in the basic schools?
3. How does the availability of water, sanitation and hygiene facilities affect pupil's academic performance in the basic schools?
4. What coping strategies are being adopted by pupils to meet their water, sanitation and hygiene needs?

1.4 Significance of the Study

This study would contribute significantly in a number of ways to diverse groups and stakeholders as it seeks to shed light on the issues of water, sanitation and hygiene (WASH) in basic schools which have been found to have a positive correlation to a number of human development issues. Firstly, the conduction of this research would help to bridge the seeming knowledge gap that currently exist in conventional literature in relation to how the usage of water, sanitation and hygiene facilities impact on basic school pupil's academic performance and related human development variables such as quality of health especially within the Ghanaian jurisdiction.

The bridging of the knowledge gap would give greater insights to students, researchers, academics and the general public alike about the previous and emerging trends on the subject of WASH. This study could also give the necessary impetus to persons in the research community to explore other knowledge gaps that exist outside this study to further enlighten the academic community and the general public on WASH and related subjects. Also, this study would bring to the fore pertinent WASH issues which currently exist in basic schools and this issues that this study would bring to the fore could serve as a springboard for policy initiators especially in the education and health sectors to formulate appropriate policies that address the issue on a wider scale across basic schools in the country.

Furthermore, this study could also help to inform Non-Governmental Organisations (NGOs) and Donor Partners in areas they need to focus their advocacy and intervention support into to help ameliorate the dire WASH situation in schools. Last but not least, the study would help to bring to the

attention of the basic school pupils and the general public the need to take WASH issues serious and adhere to the protocols that help to deal with the pertinent WASH issues for the general well-being of everyone.

1.6 Scope of Study

Contextually, the study is based on assessing the effects of water, sanitation and hygiene facilities on academic performance of basic school pupils at Dzodze in the Ketu North Municipality of the Volta Region, Ghana. With this context, the study will focus specifically on the identification of the types of water, sanitation and hygiene facilities in the basic schools in the municipality; assessment of the state of the water, sanitation and hygiene facilities in the basic schools; examination of the effects of water, sanitation and hygiene on basic school pupils participation in academic activities as well as the identification of the coping strategies being adopted by pupils to meet their water, sanitation and hygiene needs. In answering these study objectives, basic school pupils as well as Teachers would constitute primary respondents of the study.

Geographically, the study would be conducted among basic school pupils at Dzodze in the Ketu North Municipality of the Volta Region, Ghana. The study area was chosen ahead of other communities within the Municipality because it serves as the Municipal capital and home to a number of Government basic schools with challenges related to WASH therefore justifying the propriety of the location and the conduction of the study.

1.7 Limitations of the Study

The study is limited to the effects of access to water, sanitation and hygiene facilities among basic schools and it is based on data collected from sampled schools within the Ketu North Municipality.

1.8 Delimitations of the Study

This study confines itself to interviewing basic school pupils in Ketu North Municipality. Four government selected schools were used. Due to financial and time constraints, the study is limited to only these four basic schools.

1. Definition of Significant Terms used in the Study

Hygiene: Refers to the practice and acquisition of knowledge of keeping oneself and surrounding environment clean i.e. hand washing with soap.

Sanitation: Refers to the science of preventing and reducing diseases through provision of adequate toilet facilities to pupils.

Water: Refers to safe drinking water for the pupils i.e. treated or untreated but uncontaminated sources such as protected springs, boreholes, piped.

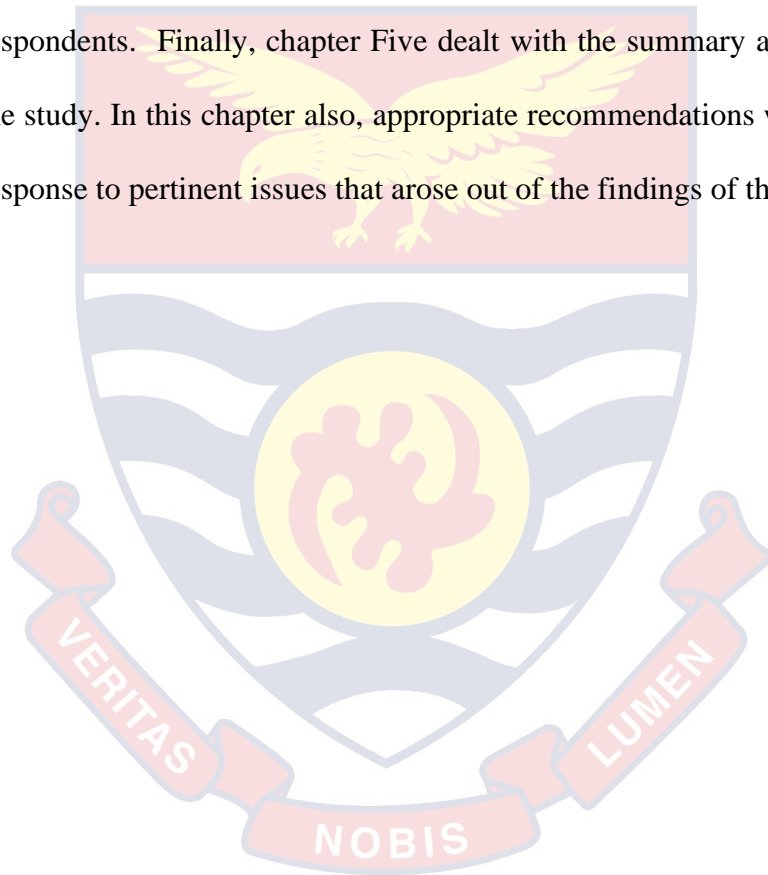
Performance: Refers to Mean score in terminal examinations, attendance/retention rates and enrolments.

WASH in Schools: Is concerned with Water, Sanitation and Hand washing Facilities in Schools along with hygiene education.

1.8 Organisation of the study

The study is organised into five chapters. The chapter One provides information on the background of study, the research problem statement, research questions, the objectives of the study, significance of study as well as the scope of study.

The chapter Two provides the empirical foundation of the study. This chapter dealt with the concept of Water, Sanitation and Hygiene (WASH) and its related concepts. Chapter Three explained the methodological approach used for the study. This includes the various data sources, research paradigm, methods used in collecting the study data and the validity and reliability of the research. Chapter Four focused on presentation of the findings of the study. It includes mainly the analysis and thorough discussion of data collected from the respondents. Finally, chapter Five dealt with the summary and conclusion of the study. In this chapter also, appropriate recommendations were proffered in response to pertinent issues that arose out of the findings of the study.



CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The literature review forms the foundation upon which an academic research is premised. As such, this section of the study endeavors to bring to the fore previous empirical scholarly works conducted in the area of water, sanitation and hygiene (WASH) as well as emerging trends in the subject area under investigation. This section, therefore, touches comprehensively on WASH and its related concepts as highlighted in previously conducted scholarly researches.

2.2 The Concept of School Water Sanitation and Hygiene (WASH)

The UN General Assembly declared the period from 2005-2015 the International Decade for Action, “Water for Life” (WHO, 2005). Unsafe drinking water, along with poor sanitation and hygiene, are the main contributors to an estimated 4 billion cases of diarrheal diseases annually, causing 1.8 million deaths mostly among children less than 5 years of age (WHO, 2005). Although clean water is a human right, 1.1 billion people still do not have access to safe drinking water (WHO, 2006). About 1.8 million people die from diarrheal illnesses every year (WHO, 2007). These illnesses are mainly due to lack of safe drinking water, sanitation and hygiene. In tandem with the above, children in school have a right to basic facilities such as school toilets, safe drinking water, hand washing facilities, clean surrounding and basic information on hygiene. If these conditions are created, children learn better and can bring concepts and practices on sanitation and hygiene back to their families thus bringing about behavioral changes in the entire community (IRC, 2007).

To achieve the general School WASH objectives, a school with adequate WASH should have a functional and reliable water system that provides sufficient water for all school needs especially hand washing and drinking. The school must also have a sufficient number of latrines/toilets facilities for pupils and teachers that are private, safe, clean and gender segregated. The school should have several hand washing facilities including some that are close to the latrines to facilitate hand washing after defecation. Facilities should cater for small children, girls of menstruation age and children with disabilities. Hygiene education should be an integral part of the school WASH program (UNICEF, 2011).

2.3 The concept of Sanitation

Sanitation can be defined as the adoption of measures to eliminate unhealthy elements especially with regard to dirt and infections (Shastri, Raval & Mapuskar, 2010). Since the Sanitation Revolution of the nineteenth century, according to UNEP (2005), there is a growing body of knowledge demonstrating the fact that, causes and pressures of any of today's environmental problems can be traced back, directly or indirectly, to the lifestyles, choices, values and behaviours of local communities (Daramola, 2012). This therefore calls for a holistic approach of participation in finding solutions thereby establishing the fact that all stakeholders have a role to play in the different processes of environmental sanitation, both in terms of subsidiarity of decision-making processes and sustainability of environmental services in communities (UNEP, 2005).

Currently, of the world's over 7 billion people, some 2.6 billion people still lack access to improved sanitation, two-thirds of whom live in Asia and

sub-Saharan Africa (WHO, 2006). And so, there is the need to shift away from simply providing centrally planned infrastructure to approaches that can help create and serve people's motivation to improve their own sanitation (WHO/UNICEF, 2013). This is because in developing countries, unimproved sanitation facilities have become the main cause of widespread and serious health problems. However, improvements in these services show few health benefits unless they are coupled with improved hygiene behaviour (Masangwi *et al.*, 2010; Tsinda *et al.*, 2013). With poor sanitation, poor hygiene, and poor water supply systems still responsible for about 50% of the consequences of childhood and maternal underweight, there appears a link between the two: an exposure to one condition may increase the vulnerability of the affected person to the other (Mara, Lane, Scott & Trouba, 2010). Therefore, there is the need to develop innovative approaches and integrate them into social institutions such as schools and other important institutions (Rheingans, Dreibelbis & Freeman, 2006). It has however been observed that many national data and progress reports on the Sustainable Development Goals (SDGs) target on sanitation have focused mostly on access at household levels without reference to access at public places like the schools even though these places are peculiar settings and temporary abode which inhabit pupils and students (Adenuji & Afolabi, 2010).

2.4 School Sanitation and Health

The transmission routes of different excreta and water-related diseases are closely linked and are best imagined as a web of pathways influencing each other. For example, a person sick with diarrhoea can infect another person by direct contact, or by contaminating food, the environment or water. Flies can act as vectors of pathogens effectively connecting the different pathways.

Water-related diseases include those due to micro-organisms and chemicals in water people drink; diseases like schistosomiasis which have part of their lifecycle in water; diseases like malaria with water-related vectors; and others such as legionellosis carried by aerosols containing certain micro-organisms. It also contributes to the spread of dangerous food related illnesses like salmonella and E. coli (For other demographic and economic studies about the link between access to safe water and general health outcomes, (Jalan & Ravallion, 2003).

Hence both girls' and boys' schooling may be affected by the general health related consequences of poor water, since it is found that children's health is an important determinant of their schooling (Colclough *et al.*, 2000). Literature suggests that having access to safe water prevents diseases that are related to water. Clean water further strengthens the health of children and offers them the right to go to school regularly like any other child. According to Coutsooudis *et al.*, (2010) a well-designed prospective cohort study found out that poor water and sanitation significantly contributed to poorer health among the HIV positive women. Similarly, a study in Nigeria found a 46% reduction in diarrhoea among people living with HIV following a point of use water treatment intervention, even though over 80% already had improved water supplies (Barzilay *et al.*, 2011), although the study lacked an adequate control group. WASH can protect the very young and those infected with HIV from such infections such as diarrhoea and skin diseases.

One randomised trial, providing people living with HIV/AIDS with guidance on household water treatment and safe storage, reduced the number of days they had diarrhoea by 33% (Lule *et al.*, 2005). Although empirical studies have suggested that the effect of household water treatment on diarrhoea may

be smaller than observed, its effect could be important in people living with HIV/AIDS (PLWHA) because of their high susceptibility to infections that would not cause illness in healthy individuals. Dirty drinking water and unclean hands are also the source of intestinal parasites in more than a third of the world's children. Most of these children are poor, get infected soon after they stop breast-feeding, and can be infected and affect their entire life. Around 60 million school age children experience such terrible infections, which can be related to a six-month development delay in cognition and learning. Absenteeism is also greater among infected students. Safe water provision, when undertaken with deworming, has a much more pronounced impact on children's health, rates of diarrhoea, and learning potential (Zwane, Peterson & Kremer, 2007). Educating children on how to treat unclean water is one area that should be taught in school alongside hand washing. They should also be encouraged to exhibit these hygiene behaviours at home so that their family could emulate them to prevent infections which could affect their learning potentials.

2.5 Sanitation and Pupils' Performance

All children need a sanitary and hygienic learning environment but the lack of sanitation and hygiene facilities in schools has a stronger negative impact on girls than boys. Girls need safe, clean, separate and private sanitation facilities in their schools. According to a study by the Government of Bangladesh and UNICEF, it was revealed that there was 11% increase in girls' enrolment mainly due to the provision of sanitary latrines (Redhouse, 2004) as quoted in (IRC, 2007). A similar study in Kenya found out that provision of safe toilets reduced girls' absenteeism by 39% (UNICEF, 2010). The studies

looked at how provision of sanitation increased enrolment and reduced absenteeism respectively, however it is also known that enrolment is important to increase access to education and that reduced absenteeism is important in helping the pupils to complete the syllabus and hence perform better. This study therefore extends from where these left to find out if the reduction in absenteeism was useful in contributing to better mean grades for these schools.

A study on violence in and around schools in Swaziland and Zimbabwe revealed that girls considered their toilets as unsafe places, the unsafe toilets were seen to be cut off, isolated where as in contrast, the latrine outside the headmaster's office was considered safe (Mitchell & Mthopi-Tapela 2004) as quoted in (IRC, 2007). These findings have brought in an interesting perspective in the provision of sanitation facilities in schools i.e. the facilities should be located in safe, secure and child friendly environment as this is important so that the pupils are feeling safe and psychologically at peace enough to concentrate in their studies; this may contribute to reduced absenteeism and thus better performance. Esrey (1994) as quoted in (IRC, 2007) in his analysis of 144 water and sanitation studies which show the importance of improved hygiene and safe excreta disposal as interventions to reduce diarrhea found out that safe excreta disposal contributed to the highest i.e. 36% of reduction in diarrhea among other variables. The reduction then is expected to also reduce absenteeism due to illness and eventually improve performance.

Shordt (2004) & De Clercq *et al.* (1998) in their study in Mali West Africa, demonstrated that academic performance is related to the level of schistosomiasis (a worm caused by poor sanitation) infection as measured by the number of eggs per 10ml urine. The findings of the study seem to answer

the research questions of this proposed study, however, it is important to note that the sample was only 580 children in two primary schools in the whole country.

2.6 Safe Drinking Water and Pupils' Performance

Access to safe drinking water is essential to health, a basic human right and a component of effective policy for health protection for both the school and community. The importance for water for health and development has been reflected in the outcomes of a series of international policy forums such as the Alma-Ata primary Health Care Declaration (WHO, 1978), the World Water Conference in Mardelplata, Argentina (WHO, 1977), the Millennium Development Goals (WHO, 2000) and the Johannesburg World Summit for sustainable Development (WSFSD, 2002).

In general, literature indicate that it is very important to provide safe drinking water to pupils as a way of reducing sanitation related diseases and hence improved health, retention, performance and transition of all learners. However, the provision of safe drinking water to schools is still a gap in rural schools as confirmed by (Montgomery *et al.* (2012) in their assessment of WASH facilities among some selected basic schools in Ghana. In Bangladesh, findings of project evaluations and research found a 15% increase in school's attendance when safe water was available within 15-minute walk compared to one hour or more. A similar study in Tanzania showed a 12% increase in school attendance when water was available within 15 minutes (Redhouse, 2004) as quoted in (IRC, 2007).

2.7 Hand Washing and Pupils' Performance

Diarrhoea which rarely leads to deaths in developed world countries is a leading cause of death among children under age five leading to 1.5 million deaths a year in the developing world countries (UNICEF/WHO, 2013). According to Lopez-Quintero *et al* (2009) germs are transferred sick children some more easily when they have little or no water and soap to wash hands (Lopez-Quintero, 2009). The germs cause diarrhea which leads to children missing school negatively impacting on their syllabus coverage and academic performance in the long-term.

In China, an evaluation of school hand washing with soap program was found to have reduced absentee days by 54% (UNICEF, 2010). The findings of this evaluation were very positive as far as keeping the children in school is concerned and ensuring good health which is important for their physical and intellectual development. However, this positive impact on absenteeism needs to contribute to better academic performance because the stakeholders of the school are always more concerned with the academic outcomes more than other outcomes in the school system. Another study in Vietnam investigating hand washing behavior rural Vietnam's school setting showed that children liked the smell of soap and knew they needed to wash their hands with soap. They understood the relationship between germs and disease and the role of washing hands with soap in protecting their health and preventing the spread of diseases such as diarrhea, flu ((Dutton, 2011). These diseases could easily keep the children out of school and negatively impact on their academic performance in the long term, these needs to be linked directly to the practice of hand washing so that the children can sustain the behavior of hand washing.

In Uganda, a study by Kisakye *et al.*, (2013) investigated the factors influencing proper hand washing among primary school children in Jinja District. The study found out that proper hand washing among primary school children was influenced by availability of conveniently placed hand washing facilities at the school and class of the children (Kisakye, 2013). The researchers' findings confirm the importance of providing the hand washing facilities and give room for further research to investigate gains made from such provision and also for use in resource mobilization for continued provision of hand washing facilities for schools.

2.8 Reduced Diarrhoea and other WASH-Related Diseases in School

Students

Despite the biological plausibility that improvements in school WASH conditions will be beneficial for pupil health, results from school-based WASH evaluations have been mixed. There is evidence that WASH in Schools programs have a positive impact on child health, including reductions in diarrhoeal disease and other hygiene-related diseases. Migele *et al.* (2007) examined the impact of a simple school-based water treatment and hand-washing intervention in a boarding school in Kenya: i.e., clay pots modified with narrow mouths and ceramic lids, taps for drinking water, plastic tanks with taps for hand washing, WaterGuard (i.e., sodium hypochlorite solution) for drinking water, and soap for hand washing. Before-and-after rates of diarrhoea disease (with no control schools) indicated a more than 50% reduction in recorded cases of diarrhoea among students.

In their evaluation of WinS interventions in Mali, Trinies *et al.* (2016) found that, as compared with control schools, there were lower odds of students

in beneficiary schools reporting diarrhoea (OR 0.71, 95% CI 0.60-0.85) or respiratory infection symptoms (OR 0.75, 95% CI 0.65-0.86) in the past week. And a study in rural Kenya by Patel *et al.* (2012) found that school-based water treatment and hygiene programs resulted in a decrease in rates of acute respiratory illness, although no decrease in acute diarrhea was observed. Improving school-based WASH can also reduce other hygiene-related diseases, such as soil-transmitted helminthes (STH) infection (Bieri *et al.* 2013; Freeman *et al.* 2012; Freeman *et al.* 2013). For example, Bieri *et al.* (2013) found that among Chinese school-children, the incidence of infection with STHs was 50% lower in the intervention group that received a STH education package than in the control group (4.1% vs. 8.4%, $p < 0.001$).

And in Mali, Freeman *et al.* (2013) found that provision of school-based sanitation, water quality, and hygiene improvements reduced reinfection of some STHs after school-based deworming, but the magnitude of the effects were helminthes species-specific. Results, however, are not uniformly clear or positive. In an evaluation of a hand-washing promotion program in Chinese primary schools, rates of diarrhoea were too low in both intervention and control groups to identify attributable differences in prevalence (Bowen *et al.*, 2007). Some studies indicated that basic interventions that include hygiene promotion, water treatment, and behaviour change did not reduce rates of diarrhoeal disease (Freeman *et al.* 2014; Patel *et al.*, 2012). In a multi-country study, Dujister *et al.* (2017) found that the STH prevalence at baseline and at follow-up did not significantly differ between intervention schools (that provided deworming and improved hand washing) and control schools. And a study by Greene *et al.* (2012) conducted in schools in western Kenya found that hygiene promotion

and water treatment did not reduce risk of *Escherichia coli* presence on pupils' hands; further, the addition of new latrines to intervention schools significantly increased *E. coli* presence among girls (RR = 2.63, 95% CI 1.29–5.34) which they attributed to an absence of sufficient hygiene behaviour change, and lack of soap, water, and anal cleansing materials. It is important to note, however, that presence of *E. coli* on hands is a variable that is difficult to interpret in terms of disease risk and outcomes.

Context is important. For example, Freeman *et al.* (2014) found that local water availability affected the impact of school-based WASH interventions on diarrhoea rates among pupils. Pupils attending 'water-scarce' schools (in which there was no dry-season water source within 1km) that received WASH intervention (including water-supply improvement, hygiene promotion and water treatment, and sanitation improvements) reported a reduction in diarrhoea incidence and days of illness; they reported a 56% difference in the risk of diarrhoea for pupils attending intervention vs. control schools in water-scarce sites (adjusted risk ratio (aRR) 0.34, 95% CI 0.17–0.64).

No statistically significant effect was detected for any intervention in 'water-available schools', nor for 'water-scarce' schools that received only hygiene promotion and water treatment. Similarly, Garn *et al.* (2017) found that in water-scarce schools in Kenya, there was reduced prevalence of diarrhoea among pupils attending schools that adhered to two or three intervention components (prevalence ratio 0.28, 95% CI 0.10–0.75), compared with schools that adhered to zero components or one. It was not clear why results were different in water-scarce versus water-available schools, but it is possible that WASH interventions in water-scarce schools were more comprehensive.

There is widespread recognition that WASH infrastructure and resources are important foundations for hygiene behaviour change and reduced risk of WASH-related diseases. There is evidence, however, that latrine construction, without other supporting water and hygiene-related interventions, is not effective at reducing diarrhoeal disease (Freeman *et al.* 2014; Dujister *et al.* 2017). Possible explanations are that without broader hygiene promotion and latrine maintenance efforts, construction of latrines alone may not result in their use or (conversely) latrines may increase exposure to faecal pathogens if they are poorly maintained, used incorrectly, or if hygiene resources are not available during and after use (Freeman *et al.* 2014; Caruso *et al.* 2014). The health benefits of improved WASH infrastructure and resources in schools may depend on consistent availability of soap and water for hand washing and on conditions of the latrines, not only pupil to latrine ratios (Grimes *et al.* 2017).

2.9 Improved WASH Knowledge, Attitudes and Hygiene Behaviours

Dreibelbis *et al.* (2016) report findings of an intervention that aimed to improve hand-washing after toilet use among students in two primary schools in rural Bangladesh. Dedicated locations for hand-washing were constructed in both schools. Two nudges were implemented: first, connecting latrines to hand-washing stations via brightly painted paved pathways; second, painting footprints on pathways guiding students to the hand washing stations and handprints on stations. Soap was provided and schools were asked to make soap available and refill water storage containers each day. At baseline, hand-washing with soap (HWWS) was low (4%); this increased to 68% the day after nudges were completed and 74% at both 2 weeks and 6 weeks post intervention.

The high rates of observed handwashing post-intervention suggest that nudges can have sustained effects on hygiene behaviours.

A related cluster-randomized trial in schools Bangladesh by Grover *et al.* (2018) demonstrated comparable increases in rates of handwashing with soap five months after intervention both for a nudge intervention (paved path with painted shoe-prints and arrows connecting latrines to the handwashing facility, painted handwashing station with handprints and a dedicated location for soap) and high intensity hygiene education initiatives. La Con *et al.* (2017) found that installation of water and handwashing stations in schools in rural Kenya, coupled with WASH education, enabled student handwashing with stations located closer to latrines used much more frequently. One randomized cluster trial in rural Kenya by Saboori *et al.* (2013) examined the impact of provision of regular soap and latrine cleaning materials and hygiene education; pupil hand-washing rates following toileting were observed to be 32-38% in intervention schools compared to 2% of students in control schools.

2.10 Reduced Disease Burden and Improved Hygiene Practices in Households and Communities

In addition to limiting pathogen transmission in the public domain - such as at schools - school-level WASH interventions may also reduce community disease burden and improve hygiene knowledge. A study in Kenya found that in water-scarce areas, school-based WASH interventions that included improvement in water supply reduced diarrhoea among school students' siblings under the age of five who were not attending school (Dreibelbis *et al.* 2014). The authors suggest this could be due to diffusion of improved hygiene practices and behaviours in both home environments and community, or

interruption of pathogen transmission in school contexts thereby reducing exposure and transmission in domestic environments. Another study in Kenya documented transfer of knowledge from school students to their parents, identifying increased parental awareness and household use of water treatment with flocculent disinfectant following student hygiene education and provision of water treatment products to students; improved household water treatment practices were sustained over one year (Blanton *et al.* 2010). A school-based WASH intervention study also in Kenya documented the transfer of knowledge about point-of-use water treatment practices and increased utilization of Water Guard in student's households as indicated by having chlorine residuals in stored water; parents also reported improved hand-washing and 38% of parents demonstrated correct hand-washing technique (O'Reilly *et al.* 2008). However, based on their study in Burkina Faso, Erismann *et al.* (2017) warn that although children can promote health messages to family members, effective behaviour changes among family members is more difficult to achieve due to the challenge of changing practices and the broader constraints that limit improved behaviours (e.g. water scarcity).

2.11 Improved Student Enrolment and Attendance

Improved school WASH conditions may reduce student absence by providing services (including, importantly, for girls who are menstruating) and by reducing illness transmission (Pearson & Mcphedran, 2008). There is some evidence that improved hand-washing with soap at school can reduce illness in school-aged children thereby reducing absence from school (Freeman *et al.* 2014; O'Reilly *et al.* 2008; Patel *et al.* 2012; Trinies., Garn., Chang & Freeman, 2016; Freeman *et al.* 2012; Bowen *et al.* 2007; Pearson & Mcphedran, 2008).

Interventions that deliver hand-washing promotion and point-of-use water treatment have reported reductions in student absence of between 21% (Blanton *et al.* 2010) and 61% (Hunter *et al.* 2014) with one study specifically identifying reduced absence among girls (i.e. 58% reduction in the odds of absence for girls) (Freeman *et al.* 2012).

A school-based water and hygiene intervention in public primary schools in Kenya found a decrease in student absence of 35% relative to baseline as compared to a 5% increase in neighbouring schools (O'Reilly *et al.* 2008). Talaat *et al.* (2011) identified a 21% reduction in school absence from all illnesses (e.g. diarrhoea, conjunctivitis, influenza) as a result of an intensive hand-washing campaign in Egypt; absences caused by influenza-like illness, diarrhoea, conjunctivitis, and laboratory-confirmed influenza were reduced by 40%, 33%, 67%, and 50%, respectively. A small pilot study in Ghana entailed provision of sanitary pads and puberty education to adolescent girls in both intervention and control schools, with the intervention found to significantly improve attendance (Montgomery *et al.* 2012). Evaluation of a comprehensive WASH intervention in schools in Bangladesh - using a non-experimental survey design - reported a 9-12% reduction in school absence among girls (varying between schools) (UNICEF, 1994).

A trial of school-based WASH interventions in Kenya found that cleanliness of latrines was strongly correlated with recent student absence (Dreibelbis *et al.* 2013). And a study of hand-washing intervention in Chinese primary schools found that the expanded intervention (standard government education plus hand-washing program, soap for sinks, and peer hygiene monitors) reported 42% fewer absence episodes and 54% fewer days of

absence, and the standard intervention (handwashing program) reported 44% fewer absence episodes and 27% fewer days of absence (Bowen *et al.* 2007). Some intervention studies, however, found no evidence of impact on attendance.

A study in the Chitwan region of Nepal (Oster & Thornton, 2009) trialled the use of menstrual cups (a silicone cup used internally for menstrual flow management) with a small sample of schoolgirls. The study found the technology had no impact on school attendance or school test outcomes; the authors suggest this is because the technology assisted only with management of blood, and did not reduce cramps which were reported as the primary reason for non-attendance. However, the study had several limitations including self-reporting of menstrual cup usage, and lack of consideration of existing water and sanitation facilities in schools. A trial in Kenya to assess the impact of a scalable, low-cost, school-level latrine cleaning intervention on pupil absence did not find a reduction in absenteeism; the authors hypothesized that the additional impact of cleaning may not have been sufficient to reduce absence beyond reductions attributable to the original WASH intervention (Caruso *et al.* 2014).

2.12 Hygiene Education and Pupils' Performance

Simply providing safe and clean water and sanitation facilities in schools is not enough. Behavioral change is also needed to ensure proper use and maintenance of the facilities and better hygienic behavior. In the fight against diarrheal disease, hygiene education, including hand washing, is the single-most cost-effective health intervention. Hygiene education is not only important for a healthy school environment and pupils' performance; it also offers

opportunities for communicating with and influencing children's families (Buoya & Neeveven, 2010).

There are examples from the field demonstrating that hygiene education and the demonstration of good practices in the school environment can have a wider impact on communities (UNICEF, 2011). This is because children can easily act as agents of change in their households and communities influencing the hygiene practices of their parents and siblings. It is further expected that in the long-term as children grow and become parents and caregivers themselves, improved hygiene behavior will have a positive impact on child survival rates and development for the future generation including academic performance.

In Indonesia, a baseline study in the district of East Lombok showed that knowledge of benefits of hand washing was low and the practice needed to be promoted (Buoya & Neeveven, 2010). The findings of this study therefore call for further studies with a view of directly linking the benefits of hand washing to pupil's performance in schools so that more stakeholders can contribute to the investment in School WASH programs thus increasing awareness through hygiene education. A survey in Djibouti sponsored by UNICEF in 2009 called National School Hygiene and Sanitation Survey found out that there are different levels of hygiene knowledge among school children in public and private systems and that there were significant rural/urban disparities in the availability of hygiene education classes (UNICEF, 2011). An assessment of six country projects by UNICEF and International Water and Sanitation Centre (IRC) states that it is difficult to isolate the impact of school WASH from other awareness raising programs on households and communities (UNICEF & IRC 2006) as quoted in (Nagpal, 2010). This finding reaffirms the

role played by hygiene education in contributing to behavior change in the household and community at large. When the communities become healthy, there is reduced cost of medication and increased productivity which in turn benefits the school in terms of community contribution to school projects and to children's' other needs in schools. This is likely to contribute to the improvement in performance of these schools.

2.13 History of School Health Education Programme (SHEP) in Ghana

In 1992 the Government of Ghana directed the Ministries of Education and Health to introduce the School Health Education Programme (SHEP) in basic schools to complement and supplement the academic component of formal education and child survival. This is a similar programme to what the World Health Organization (WHO) defines as school health programme which is seen as a combination of services ensuring the physical, mental and social well-being of learners so as to maximize their learning capabilities. SHEP also seeks to equip school children with the necessary health skills that will enable them take control of their own wellbeing, have maximum pupil-teacher contact hours and use available human and material resources to ensure improved health status of school children.

This programme also advances the well-being of learners, by positively influencing their health, knowledge, attitudes, beliefs and values. In addition, SHEP aims at ensuring the provision of comprehensive health and nutrition education and its related support services in schools. It is also to equip children with basic life skills for healthy living, which will lead to improvements in child survival and educational outcomes, including school enrolment, retention and academic performance. SHEP is also envisioned to create well informed health

conscious school populations who have full potentials to act as change agents in their homes and communities and to contribute effectively and efficiently to national development (WHO, 2009). The mission of SHEP is to facilitate the effective mobilisation and deployment of available human, material and financial resources to equip school children with basic life skills for healthy living through skill – based health education, promoting good health and preventing diseases among the school population (Snel, 2003; DANIDA, 2007).

2.14 The Importance of School Sanitation and Hygiene Education (SSHE) in School

A study by Del Rosso & Marek (1996) revealed that healthy children are more likely to attend school regularly and they are also more likely to perform better in their academic work. They explain that children who are taught in schools to acquire essential health related knowledge and skills are not only less likely to engage in health-compromising behaviour as adolescents, but more likely to carry the knowledge and skills into adulthood and lead healthy lifestyles. According to WHO (2009), children pass on health-related knowledge and skills acquired from schools to parents and other members of the household. Thus, school - based health education programmes benefit not only students but family members and the community at large. A school child educated to the benefits of sanitation and good hygiene behaviour is a conduit for ferrying those messages far beyond the school walls, bringing lasting improvement not only to his or her health and wellbeing, but also to that of the family and the wider community (Snel IRC, 2003).

Investing in school sanitation and hygiene education and the importance of School Health and Hygiene Education therefore cannot be over- emphasized.

Sanitation and hygiene are therefore fundamental to good health and dignity, and improving sanitation and hygiene practices should not be underestimated. SSHE is an integral package of school health education systems on water, sanitation and hygiene and needs to be recognised and endorsed by all stakeholders. Likewise, a joint strategy session at the World Education Forum held in Dakar in 2000 made a strong case that provision of effective school health services is an important strategy for achieving Education for All. Provision of school health services not only responds to a need, but also increases the efficacy of other investments in child development, ensures better educational outcomes, achieves greater social equity and is a highly cost-effective strategy (Integrated School Health Policy 2012).

Globally, about 1.1 billion people are currently without access to improved water supply and about 2.4 billion do not benefit from any form of improved sanitation service (WHO, 2000). Majority of these people live in Asia and Africa. In a study conducted by W.H.O in Africa, it came to light that two out of five people lack improved water supply. Burgers (2000), opines that the main component of sanitation and hygiene is the provision of safe water and sanitation facilities in schools. To him, this is the first step towards a healthy physical learning environment, benefiting both learning and health. However, Burges is of the view that, the mere provision of these facilities does not necessarily make them sustainable or produce the desired impact. It is the use of toilet facilities and its related appropriate hygiene behaviour of people that provides health benefits. In schools, hygiene education aims to promote these practices that will help; to prevent water and sanitation-related diseases as well as encouraging healthy behaviour in the future generation of adults. The success

of a school hygiene programme is therefore not determined only by the number of toilet facilities constructed and the number of hand pumps installed or water connections built but by what learners know about sanitation and hygiene practices and how they put this knowledge into practice (WHO, 1999).



CHAPTER THREE

METHODOLOGY

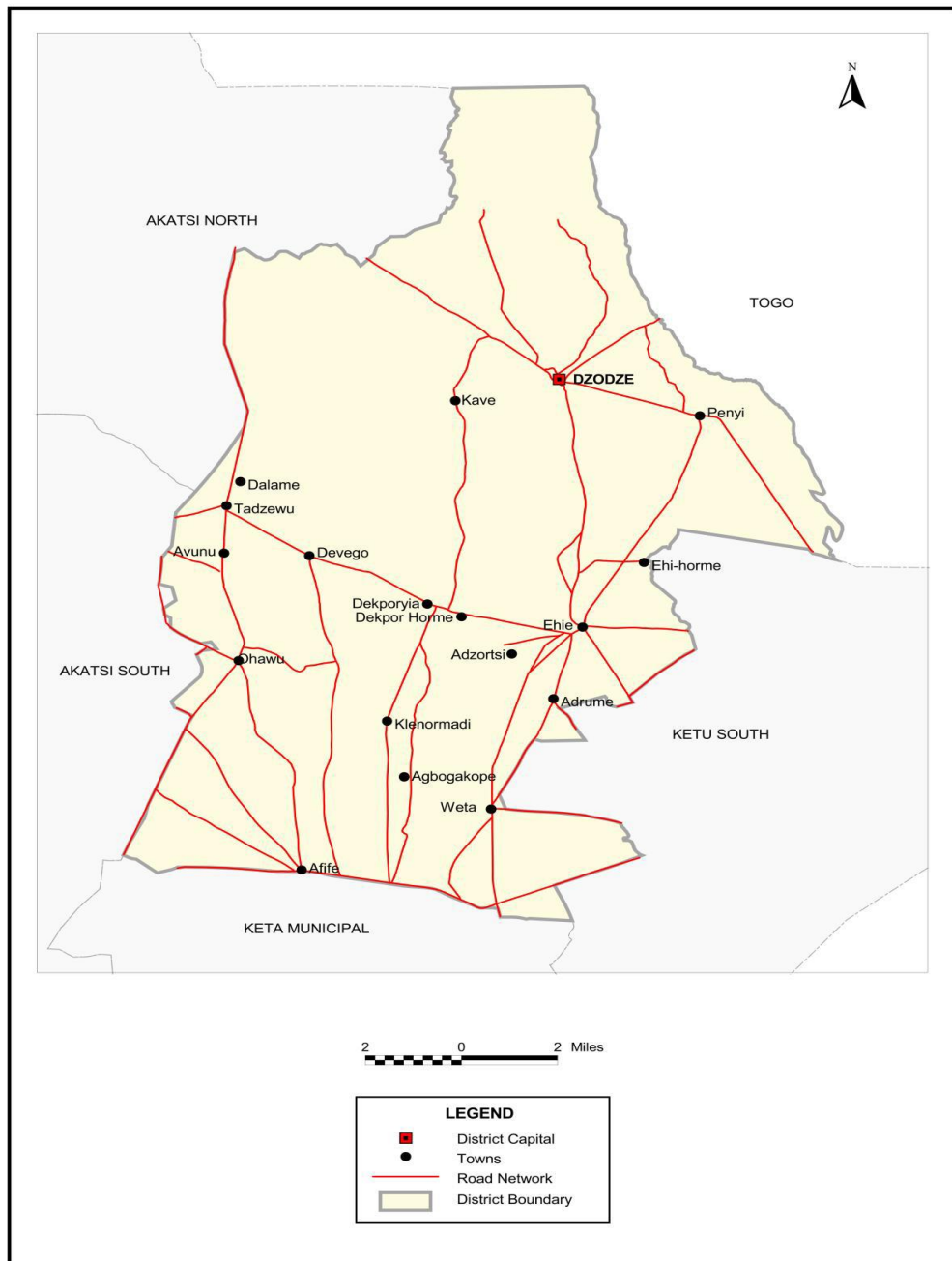
3.1 Introduction

This section of the study examined the research design frameworks and approaches that were used in the conduct of the study. The section is made up of research design and approach, research population, sample size, data collection instruments and sampling techniques and methods of data analysis. The section also touched on the ethical considerations that were observed during data collection and analysis.

3.2 Profile and Location of Study Area

The Ketu North Municipality is one of the 32 new districts created in the Ghana in the year 2008. It was carved out of the then Ketu district by a Legislative Instrument (LI 1841 of 2008) and was inaugurated on the 29th February, 2008. It has its administrative capital at Dzodze, which lies about 80 kilometres south of Ho, the regional capital. Ketu North District is located between Latitude 60 03'N and 60 20'N and Longitude 00 49'E and 10 05'E. The district shares boundaries with the Akatsi North District to the north, the Keta Municipality to the south-west, Republic of Togo to the east. To the south, it is bounded by the Ketu South Municipality and to the west by the Akatsi South District. The District covers a total surface area of 423.8 square kilometres representing 2.1 percent of the total land area of the Volta Region.

DISTRICT MAP OF KETU NORTH



Source: Ketu North Municipal Assembly (2014)

3.3 Research Design Framework

The study adopted the mixed-method research approach which is made up of both qualitative and quantitative data. The mixed-method approach allows researchers to cater for inadequacies of a single method according to Creswell

et al. (2004). This approach is often employed in research to understand social, economic, cultural and environmental variables of communities (Ozawa & Pongpirul, 2014) which this study seeks to undertake. Even though mixed-method type of social research aims to construct representations of social life through scientific approaches, they create different kinds of knowledge through the data collection methods employed. Mixed-method approach therefore combines the strength of qualitative and quantitative research to produce a balanced and broad-based research output. In using the mixed-method approach, the cross-sectional survey research design was used in the collection of data from respondents which comprised of basic school pupils and their Teachers at Dzodze in the Ketu North Municipality with both serving as primary respondents. The data collected using the cross-sectional survey was both quantitative and qualitative data.

3.4 Population and Sample Size of the Study

The population for this study is made up of Pupils and Teachers in some selected basic schools at Dzodze in the Ketu North Municipality of the Volta Region serving as key primary respondents of the study. These participants are persons who are directly involved in the use of WASH facilities in the basic schools and therefore had the required knowledge and information on the subject matter under investigation. In determining sample sizes, Kothari (2004) argued that sample size must not be too small or large but optimum. A good sample size therefore is one which meets the requirement of efficiency, reliability, flexibility and representativeness for the purpose of generalisation of research findings. This study therefore used a sample size of one hundred (100) Pupils and twenty (20) Teachers, all sampled from the basic schools surveyed.

This number was arrived at because both the Pupils and Teachers do not have diverse characteristics making them a homogenous population which means their responses would not significantly vary.

3.5 Sources of Data

Both primary and secondary data were used in completing this research so as to improve the reliability of the study. The primary source of data is the respondents as they gave first-hand information concerning questions raised about the effects of WASH facilities on academic performance at Dzodze in the Ketu North Municipality of the Volta Region. This was through the administration of questionnaires. There were also direct observations by the researcher in relation to the sitting and state of WASH facilities on the school compounds. The information that was gathered from these constituted the primary data. These provided data for triangulation. The other source of data is the secondary source.

Secondary data refers to already available information that the researcher falls on to help identify gaps as well as support the need for further research. Those used for this study included documents mainly from published peer reviewed articles. Others were thesis and institutional reports. These sources of data are often rich in information and can help direct the researcher on a fruitful path.

3.6 Participant Sampling Techniques

Simple random sampling technique was used to collect quantitative data from the basic school pupils that participated in the study. This approach was employed by the researcher because it ensured that every member of the

population targeted in the basic schools had an independent and equal opportunity of being part of the study. Purposive sampling was also used to collect qualitative data from the Teachers as they form an integral part of respondents for the study. This technique was employed because the Teachers in the selected schools had certain key information and experience that this study required in relation to WASH condition in the Schools. These sampling techniques therefore helped immensely in reaching the study participants and in meeting the objectives of the study.

3.7 Data Collection Instruments

The research instruments employed for the study includes questionnaires and interview guide. Interview guide was used for the teachers and this was done purposely to explain, better understand, and explore research subjects' opinions, behaviour, experiences and phenomenon. Structured questionnaire was used for students since it required a lower cognitive load on the respondent. It reduced the amount of thinking that a respondent need to undertake to complete the task and generally leads to higher response and more accurate data. The questionnaires consisted of open-ended and closed ended items.

3.8 Data collection Procedure

The questionnaires were administered to the pupils individually and they were taken through all the questions contained therein to solicit their responses. Interview guide was also used to facilitate the collection of qualitative data from Teachers of the basic schools surveyed in the Ketu North Municipality.

3.9 Research Ethical Consideration

To maintain the ethical standard of the University, the study through the researcher provided assurance of confidentiality to all respondents that participated in the research. This was done by assuring all respondents that information provided for the study would be used solely for academic purposes only. This action ensured that respondents' feel at ease in providing appropriate information required for the study without having to do much convincing. Additionally, during data analysis pseudo names (false names) were used to represent persons and groups in order for their identities not to be revealed to the public or research community.

3.10 Data Analysis

Statistical Pack for Social Scientist (SPSS version 25.0) was employed for the coding, entering processing of data gathered. The study employed inferential and descriptive statistics in the analysis of data. There were also correlational analysis done to basically examine the extent of relationship between variables whilst regression analysis was employed to examine the extent to which the predictor variables contribute to the criterion variable. Content analysis of qualitative data was also employed for data collected through the use of interview guide. Data analyzed were displayed in tables and charts because of its appropriateness in communicating clearly the findings of the study. Before the processing of data was initiated, data collected was screened by cross-checking, verifying and editing for accuracy and completeness.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the main findings of the research. The results are presented using tables which summarize the responses from the respondents to whom the questionnaires were administered to at Dzodze in the Ketu- North Municipality. The analysis of the issues of concern precedes the tables. The issues are grouped under specific themes based on the specific objectives of the study as well as the demographic characteristics of the respondents. Findings from the study have been discussed in line with other research findings conducted by other scholars.

4.2 Demographic of Respondents

4.2.1 Gender of Respondent

From the Table below, the total number of respondents sampled for the study is 100. Out of this number, the males constituted 50 with a percentage of 50% and the remaining 50 were also females with 50%. Also out of the 20 Teachers that participated in the study, there were 12(60%) male and 8(40%) of female. This shows both gender has interest in hygiene practices.

Table 1: Gender of Respondents

Gender of pupil	Frequency	Percent
Male	50	50
Female	50	50
Total	100	100

Source: Field Survey (2020)

4.2.2 Age of Respondents

As presented in the Table below, the age range between 8-12 were 46% and those within the range of 13-17 were 56%. The recorded age range of the respondents shows that they were within the basic school age category and therefore were old enough to present their views and opinions on the subject under investigation by this study. Age was to indicate the range of pupils who understood and practiced hygiene

Table 2: Age of Respondents

Age	Frequency	Percent
No response	1	1
8-12	42	42
13-17	56	56
18-21	1	1
Total	100	100

Source: Field Survey (2020)

4.2.3 Class/Stage of Respondents

From the Table below, stage 1-3 had 21 (21%), stage 4-6 were 24 (24%) whiles JHS pupils constituted 55 (55%). It is important to note that the respondents in lower section thus primary were assisted by the researcher to respond to the questions posed whiles their counterparts in Junior High School were largely able to independently respond to the research questions. On the part of the basic school Teachers, 3(15%) were at the lower primary, 3(15%) at the upper primary whiles 4(20%) were JHS teachers with 10(50%) of them being headmasters. The stage of the pupils was to know those who practice hygiene both in the school and at home.

Table 3:Class/ Stage of Respondent

Class/Stage	Frequency	Percent
1-3	21	21
4-6	24	24
JHS 1-3	55	55
Total	100	100

Source: Field Survey (2020)

4.2.4 Number of Years in School

From the Table below, some of the respondents have being in the school for some number of years of which some had 4-6 years 41(41%), others 7-10 years 29 (29%) and 1-3 years were 30 (30%). The number of years spent in the schools shows the respondents potentially had enough stay to be able to know adequately the state of the WASH facilities on the school compounds and be able to provide appropriate responses in terms of their usability and emerging issues. On the part of the Teachers, the interview results revealed that some had taught in the school for 1-3 years 5(25%), 4-6 years 6(30%), 7-9 years 5(25%) and 10- 12 years 4(20%). Generally, all the Teachers had spent enough years in the school to warrant their responses on the subject under investigation by this study.

Table 4:Number of Years in School

Number of years	Frequency	Percent
1-3 years	30	30
4-6 years	41	41
7-10 years	29	29
Total	100	100

Source: Field Survey (2020)

4.3 Types of Water, Sanitation and Hygiene Facilities in The Basic Schools

4.3.1 Water and Sanitation Facilities

From the Table below, 96(96%) of the pupils stated that they had water and sanitation facilities in their school which helped them carry out some hygiene practices while 3(3%) of them mentioned they had no water and sanitation facilities in their school which according to them makes things a bit difficult for them while in school. For the Teachers interviewed, all of them 20(100%) indicated that they had WASH facilities in the schools they teach. Both the revelation by the pupils and Teachers shows that there is high penetration of WASH facilities in the schools within the Dzodze community.

Table 5: Water and Sanitation

water and sanitation	Frequency	Percent
Yes	96	96
No	3	3
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.3.2 Type of Water Available in Schools

From the Table below, 55(55%) of the pupil stated they had standpipes of which the water was supplied by the Ghana Water Company. With this type of water facility, the pupils indicated that water does not flow sometimes which is not limited to only the Dzodze community. About 29(29%) stated also that Borehole which is either close to the school compound or on the school compound is the type of water facility in usage while 14(14%) mentioned Well

the type of water facility available on the school compound where they revealed water is always available to be drawn especially during raining season but decrease during the dry season when the water table goes down. The type of water sources available to the pupils in the schools could be said be good and clean taking into consideration the forms from which they are accessed.

Table 6: Type of Water Available

Type of water	Frequency	Percent
Standpipes	55	55
Don't know	1	1
Borehole	29	29
No response	1	1
Well	14	14
Total	100	100

Source: Field Survey (2020)

4.3.3 State of Water Facilities

With the pupils indicating the availability of water on the school compounds, it was then important to ascertain the current state of the water facilities. From the Table below, 47(47%) stated that, the state of water was good in the school which means they could drink it even if they are hungry, 29(29%) stated that the water facility presents on their school compound had worn-out which they further indicated could potentially transmit water related infections whiles the remaining 22(22%) of the respondents stated the water facility present had deteriorated which have led to a reduction in use by pupils. The result reveals that half of the respondents indicated that the water facilities were in good state with the other half stating otherwise. This therefore calls for

some level of attention from the authorities to address the challenge as water is an essential commodity of life.

Table 7: State of Water

State of water	Frequency	Percent
Good	47	47
Don't know	1	1
Deteriorated	22	22
Worn out	29	29
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.3.4 Type of Toilet Facilities

The state of toilet facilities on the school compounds just like the water has also come under some focus. From the table below, 66(66%) of the pupil said they had KVIP type of toilet facility in the school which they indicated other people within the community also use whiles 32(32%) of the pupils stated they had Pit-latrine with only 2(2%) indicating they had water closet in the school which the pupils added was the best but require water all the time to use cleanly. The availability of the toilet facilities was corroborated by the Teachers interviewed with their concern centered around the use of Pit-latrine in some of the schools which according to them is not the best considering the safety challenges associated with it usage especially by the pupils.

Table 8: Type of Toilet Facilities Available

Type of toilet	Frequency	Percent
Water closet	2	2
Pit-latrine	32	32
KVIP	66	66
Total	100	100

Source: Field Survey (2020)

4.3.5 State of Toilet Facilities

The Table below shows the state of toilet facilities in the schools. About 51(51%) of the pupils said their toilet was in a good state, while 24(24%) said it was deteriorated with 25(25%) stating their toilet had worn-out. The results showed that half of the respondents believe their toilet facilities are not in good shape which some further claim has become home to reptiles such as snakes occasionally. This challenge just like the water call the attention because of the important role toilet facilities play in keeping pupils in school especially girls. Also, concerning the Teachers, with the help of the interview guide, 9(45%) of stated the toilets were in a bad state, 1(5%) said it was very bad while 7(35%) indicated they were in good state with 3(15%) stating toilet facilities were very good in terms of their current state.

Table 9: State of Toilet Facilities

State of toilet	Frequency	Percent
Good	51	51
Deteriorated	24	24
Worn out	25	25
Total	100	100

Source: Field Survey (2020)

4.4. Assess the State of the Water, Sanitation and Hygiene Facilities

4.4.1 Hand Washing Facility

Table 10 indicates that 98(98%) of the pupils have hand washing facilities in their school which means they are able to keep themselves clean anytime the need arises with just one 1(1%) stating there are no hand washing facilities in their school. The result shows that almost all the pupils have access to hygiene facilities which is vital for health and well-being as well as their participation in school activities.

Table 10:Hand Washing

Hand washing	Frequency	Percent
Yes	98	98
No	1	1
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.4.2 Type of Hand Washing Facility

From the Table below, majority of the pupil thus 82(82%) stated they had Veronica buckets in their school which they added have been augmented during the Covid-19 pandemic whiles 16(16%) stated they only had bowls in which they have some water which they normally use for hand washing. In confirming the situation with the pupils Teachers through the interview guide, 1(5%) of the teachers stated they had washing bowl with water of which they use in washing their hands after teaching whiles 9(45%) stated they have Veronica bucket. The presence of the hygiene facilities shows that both the

pupils and Teachers have the opportunity to keep themselves clean and safe while undertaking their teaching and learning activities.

Table 11: Type of Hand Washing Facility

Type of hand washing	Frequency	Percent
Veronica bucket	82	82
Bowl	16	16
Others	2	2
Total	100	100

Source: Field Survey (2020)

4.4.3 State of the Hygiene Facility

The Table below shows 56(56%) of the respondents indicated their hygiene facilities were in good state, while 38(38%) stated the facilities were damaged with 6(6%) of them stating the facilities were deteriorated. The results reveal that nearly half of the respondents have some form of challenge with the state of hygiene facilities as they indicated they were not in proper shape that can allow the pupils as well as the Teachers to make full benefit of the facilities available thereby requiring some kind of attention to enhance the state of the facilities.

Table 12: State of Hygiene Facilities

State of hygiene facility	Frequency	Percent
Good	56	56
Damaged	38	38
Deteriorated	6	6
Total	100	100

Source: Field Survey (2020)

4.4.4 Water Availability for Sanitation and Hygiene

With the pupils and their Teachers confirming the availability of hygiene facilities, the researcher enquired if there is availability of water to use the hygiene facilities. From the Table below, 39(39%) of the pupil stated water was always available for the hygiene practices while 38(38%) of them stated water was available on some days which is a concern for them with 23(23%) indicating water was not available to them to use hygiene facilities. This is a very worrying situation because water is the bedrock of hygiene and with this important commodity absent the pupils and Teachers would be exposed to pathogenic organisms which is not appropriate.

Table 13: Water Availability for Use of Hygiene Facilities

Sanitation and Hygiene	Frequency	Percent
Always available	39	39
Not available	23	23
Available some days	38	38
Total	100	100

Source: Field Survey (2020)

4.5 Effect of The Water, Sanitation and Hygiene on Pupil Participation in Academic Activities

From the Table below, 81(81%) of the pupil stated that water, sanitation and hygiene facilities have been available to them in the school between 1-5 years while 9(9%) of them also stated that the facilities have been available between 6-10 years now with 8(8%) indicating the presence of the facilities over the past 15 years and finally 2(2%) said the facilities have been available

between 11-15. This revelation indicates the availability of WASH facilities for quite some time now.

Table 14: Water Availability for Use of Hygiene Facilities

Water, sanitation and hygiene	Frequency	Percent
1-5 years	81	81
6-10 years	9	9
11-15 years	2	2
15 and above	8	8
Total	100	100

Source: Field Survey (2020)

4.5.2 Usage of Water, Sanitation and Hygiene Facilities

From the Table below, 63(63%) of the pupils stated they use WASH facilities regularly which is very encouraging whiles 36(36%) of them said they use it sometimes which was not the best with only 1(1%) of the pupils stating it is not available for use. Even though the usage is encouraging and promising, the pupils should be entreated to use the facilities more often as far as the facilities are available.

Table 15: Usage of WASH

Usage	Frequency	Percent
Yes, i use it regularly	63	63
I use it sometimes	36	36
No, it is not available	1	1
Total	100	100

Source: Field Survey (2020)

4.5.3 WASH and Participation in Academic Activities

About 98(98%) of the pupil said the presence of WASH facilities helps them to participate in academic activities while only 1(1%) of them said the presence of WASH facilities does not change anything in relation to participation in academic activities. From the Table below, 47(47%) of the respondents said they help in their teaching and learning activities, 31(31%) of the pupil said it helps them to do sporting activities, while 17(17%) said it helps in the cleaning of the school compounds and 2(2%) of the respondents indicated it helps in undertaking entertainment and school gardening related activities. It is important to indicate that these various activities the pupils were able to participate in due to the presence and usage of WASH facilities could potentially help to develop their total being aside the main focus which is teaching and learning.

Table 16: Activity Participation

Activities	Frequency	Percent
Sports	31	31
Entertainment	2	2
Teaching and learning	47	47
Compound cleaning	17	17
School gardening	2	2
Total	99	99
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.5.3 Extent of Respondents Agreement to WASH Helping in Academic Activities Participation

From Table 17, 45(45%) of the pupil said they strongly agree on the availability of water, sanitation and hygiene facilities helping them to undertake the sporting activities, 40(40%) agreed, 7(7%) were neutral and 4(4%) strongly disagreed and disagreed respectively and that shows that they did not see water, sanitation and hygiene effect on games. The teachers confirmed the WASH facilities help most of the pupil to participate in sporting activities since they can easily visit the washroom at any time and also get water to drink.

Table 17:Sporting Activities

Sports	Frequency	Percent
strongly agree	45	45
Agree	40	40
Neutral	7	7
Disagree	4	4
strongly disagree	4	4
Total	100	100

Source: Field Survey (2020)

4.5.3.2 Entertainment Activities

Table18, 28 (28%) of them agreed that, the availability of water, sanitation and hygiene facilities help them to engage in school entertainment activities such as music and dance, 26(26%) of them were neutral, 22(22%) strongly agreed meaning the WASH facilities do really contribute to participation in entertainment activities which helps in learning about the culture of the area. About 13(13%) of them strongly disagreed in addition to

11(11%) others who also disagreed with the view that WASH helps in entertainment activities.

Table 18:Entertainment

Entertainment	Frequency	Percent
Strongly agree	22	22
Agree	28	28
Neutral	26	26
Disagree	11	11
Strongly disagree	13	13
Total	100	100

Source: Field Survey (2020)

4.5.3.3 Teaching and Learning Activities

Table 19 indicates that 49(49%) of the pupils strongly agree that, the availability of water, sanitation and hygiene facilities help them to fully engage in teaching and learning activities whiles 26(26%) agree with the assertion and explained that the WASH facilities were needed to help them pay much attention in class since they do not need to go to nearby houses for any assistance when they need to use the facilities. Also, 14(14%) of the pupils were neutral, 7(7%) disagreed and 4(4%) strongly disagreed with the view that WASH facilities help teaching and learning. A confirmation was done by the Teachers that most of the pupils participated creditably in teaching and learning since they do not have to walk to far places to get water and also to use WASH facilities which belong to households nearby. The assertion by the pupils and amplified by the Teachers confirms a number of studies that showed a positive

correlation between the availability of WASH facilities and participation in Teaching and learning of pupils.

Table 19: Teaching and Learning

Teaching and learning	Frequency	Percent
strongly agree	49	49
Agree	26	26
Neutral	14	14
Disagree	7	7
strongly disagree	4	4
Total	100	100

Source: Field Survey (2020)

4.5.3.4 Compound Cleaning Activities

The Table 20 shows, 45(45%) stated they strongly agreed in addition with 29(29%) of the agreed that, the availability of water, sanitation and hygiene facilities help them to undertake compound cleaning activities since water especially would be needed for some of these activities. About 11(11%) of the pupils were neutral and disagreed respectively with 4(4%) of them strongly disagreeing that WASH facilities help to undertake cleaning activities.

Table 20: Teaching and Learning

Compound cleaning	Frequency	Percent
Strongly agree	45	45
Agree	29	29
Neutral	11	11
Disagree	11	11
Strongly disagree	4	4
Total	100	100

Source: Field Survey (2020)

4.5.3.5 School Gardening Activities

From the Table 21, 33 (33%) of the respondents were neutral that WASH facilities to help undertake school gardening while 24(24%) of them disagreed that, the availability of water, sanitation and hygiene facilities help them to undertake the school gardening with the view that most of them do not normally water the crops they grow. Also, 16(16%) of them strongly disagreed with 18(18%) also strongly agreeing with the view that, they use WASH facilities in and out of the school gardening with 9(9%) of them also agreeing to the question posed. This position of WASH facilities not influencing school gardening was confirmed by the teachers that most of them do even enjoy from the vegetables that were been grown by the pupil since they were not able to maintain and water them most of the times.

Table 21: School Gardening

School Gardening	Frequency	Percent
Strongly agree	18	18
Agree	9	9
Neutral	33	33
Disagree	24	24
Strongly disagree	16	16
Total	100	100

Source: Field Survey (2020)

4.5.3.6 Performance of School Activities and Academic Performance

With majority of the pupils agreeing with the assertion that WASH facilities has helped them to undertake school activities, they were the performance of the school activities specifically affects their academic performance. From the Table below, 32(32%) of the pupils stated that nothing has changed with regards to the performance of these activities affecting their academic performance, 28(28%) said they now do better in the end of term exams than previously which is encouraging whiles 27(27%) stated they have become more active in class which is promising as well with 13(13%) of them indicating their cognitive skills have improved considerably over the few years.

It can then be posited that, the use of the WASH facilities on the school compounds has helped to undertake other very important school's activities which have ultimately affected academic performance quite positively judging from the responses of the pupils.

Table 22: School Activities Performed and Academic Performance

Performance of activities	Frequency	Percent
I have become more active in class	27	27
Nothing has change	32	32
I now do better in end of term exams	28	28
My cognitive skills have improved	13	13
Total	100	100

Source: Field Survey (2020)

4.6 Coping Strategies Being Adopted by Pupil to Meet Their Water, Sanitation and Hygiene Needs

After indicating the importance of WASH facilities on the performance of academic and related activities in schools, the pupils were asked if there are periods where WASH facilities were not available for use for some reason or the other. From the Table below, 77(77%) of the pupils stated there are actually periods in school that water, sanitation and hygiene facilities were unavailable which has according to them has put them in challenging situations especially on the part of the girls whiles 21(21%) of them said they have not had any period where they encountered unavailability of WASH facilities especially in the form of water and hygiene.

Table 23: Period of Unavailability of WASH Facilities in School

Periods in school	Frequency	Percent
Yes	77	77
No	21	21
No response	1	1
Don't know	1	1
Total	100	100

Source: Field Survey (2020)

4.6.2 Water unavailability

With majority of the pupils indicating periods of unavailability of WASH facilities, coping strategies that they use to manage the situation was enquired. As shown in the Table below, 47(47%) of the pupils stated they buy water from vendors in the school with regards to the how they cope with the unavailability of water in the school, 37(37%) said they have to bring water from the house and this was especially with the younger ones in the school while 9(9%) indicated that they fetch water from nearby homes of which they have to either cross the street to get the water fetched which is not the best for pupil at of that age.

About 7(7%) also stated they use water from their mates who come along with water from their homes. From the responses of the pupils, majority of them have to buy water in times of unavailability which has the potential of affecting their nutritional needs since the money expended on water would have been provided primarily for the purchase of food whiles in school.

Table 24: Unavailability of Water Management

Water unavailability response	Frequency	Percent
Bring water from the house	37	37
Buy water from vendors in the school	47	47
Fetch water from nearby homes	9	9
Use water from mates /friends	7	7
Total	100	100

Source: Field Survey (2020)

4.6.3 Sanitation Facilities Unavailability

With sanitation facilities, the Table below shows that, 49(49%) of the pupils use public sanitation facilities with regards to the how they cope with sanitation facilities whenever it is unavailable, 37(37%) stated they use nearby houses as well as Teachers houses which are closer especially during break time with 13(13%) stating they go to the bush for open defecation which is a big challenge considering the fact that the country is striving to become an open defecation free country in order to meet the sustainable development goals on sanitation.

Table 25: Sanitation Facilities

Sanitation Facility Unavailability Response	Frequency	Percent
Use sanitation facilities are not available	37	37
Use public sanitation facilities	49	49
Bush	13	13
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.6.4 Hygiene facility unavailability

From table 26, 50(50%) of the respondents stated they have access to hygiene facilities from nearby homes which is how they cope with the unavailability of hygiene facilities, and 48(48%) of them stated they depend on friend's hygiene facilities which is not encouraging though. The teachers also confirmed that fact that some of the pupil have to use water and soap from food vendors of which they the teachers at times do likewise, also stating the fact that the pupil have to depend on nearby houses for water during the times of unavailability.

Table 26:Hygiene Facility

Hygiene facility unavailability response	Frequency	Percent
Access hygiene facilities from nearby homes	50	50
Depends on friend's hygiene facilities	48	48
Others specify	1	1
Total	99	99
No response	1	1
Total	100	100

Source: Field Survey (2020)

4.6.5Effects of absence WASH facilities on academic life of Pupils

With the fact established that WASH facilities sometimes are unavailable for use by pupils in schools, this is somehow expected to one way or the other affect the academic life of the pupils. To this end, the pupils were asked how they were affected. From Table 27, 45(45%) of the pupils stated they normally go tasty in class in the absence of water which they indicated affects their concentration, 20(20%) of them said they have to walk to far places to get some

water for their washroom scrubbing which again they indicated gets them tired thereby affecting class participation, 18(18%) stated they fetch water from some nearby Wells which are not clean and they are aware it can cause sickness but they have no option. Also, 16(16%) of them said they fear when they go to the bush to defecate since they can be bitten by snakes and other reptiles.

The Teachers confirmed these challenges with 9(45%) stating that the PTA should be of support to the schools in terms of providing some poly tanks and soaps likewise 6(30%) of them were of the view that borehole drilling with poly tanks needed to be undertaken to store water.

Table 27: Effects of Absence WASH Facilities on Academic Life of Pupils

Effect of absence of WASH facilities	Frequency	Percent
Getting tired looking for water thereby affecting class participation	20	20
Absence of water makes us thirsty in class	45	45
Dirty water causes sickness	18	18
We fear when we go to the bush to defecate	16	16
No water due to broken pipe	1	1
Total	100	100

Source: Field Survey (2020)

4.6.6 How unavailability of WASH facilities can be resolved

Absence of WASH facilities means measures must be instituted and followed upon to resolve the unavailability challenges. The challenges need to be solved because the continuous lingering of the problems will negatively affect the pupils in ways that will be more detrimental than the absence of the facilities. Consequently, the pupils suggested ways they reckon can help to solve the unavailability challenges. From the Table below, 46(46%) of the pupil

stated they need poly tanks in order to harvest rain whenever it rains and this would help them since they can even fetch water with hand trucks to fill it up when there are no rains, 24(24%) of them stated that toilet facilities should be renovated from to time to make them user friendly, 18(18%) of the stated they wanted the authorities in charge of water supply should try their best to provide water continuously. Also, about 7(7%) of them said that broken hygiene facilities should be changed promptly while 5(5%) of them stated that there should be regular provision of hand washing materials by authorities as well as PTA and other benevolent groups in the community and the Municipality in general in order for them to always be clean while in school.

Table 28: Suggestions to Resolve Unavailability of WASH Facilities

Resolution of challenges	Frequency	Percent
Broken hygiene facilities should be changed promptly	7	7
Authorities must make sure water flow always	18	18
Toilet facilities should be renovated from to time	24	24
Provision of poly tanks to harvest rainwater and to store water	46	46
Regular provision of hand washing materials	5	5
Total	100	100

Source: Field Survey (2020)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section ends the chapters of the study. It is focused on the summary and conclusions of the study based on the findings which are underpinned by the objectives of the study. The section also proposed varied recommendations based on pertinent issues that the findings of the study revealed.

5.2 Summary of Findings

The presence of water, sanitation and hygiene (WASH) facilities in schools have been found to positively affect pupil's engagement in academic activities as well as their performance ranging from increased school enrolment and attendance and academic performance in terms of mean score of pupils amongst others. It is therefore very imperative to have these facilities present in the school environment to aid pupils to undertake school activities so as to boost their general growth and intellectual development. From this background, it is evidently apparent that a study to ascertain the availability and impact of WASH facilities in basic schools is in order as it will bring to the fore pertinent issues that need to be addressed.

It is against this backdrop that this study set out to investigate the effects of water, sanitation and hygiene facilities on academic performance of basic school pupils at Dzodze in the Ketu North Municipality of the Volta Region. Specifically, the study examined the types of water, sanitation and hygiene facilities in the basic schools; the state of the water, sanitation and hygiene facilities in the basic schools; the effects of water, sanitation and hygiene on basic school pupil's participation in academic activities and the identification of

the coping strategies adopted by pupils to meet their water, sanitation and hygiene needs. Through cross sectional survey, a total of 100 basic school pupils and 20 Teachers were sampled from the sampling frame available through simple random sampling and purposive sampling techniques respectively where these respondents served as the primary respondents of the study.

The results of the analysis revealed that the main WASH facilities available in the schools were stand pipes, wells and boreholes for water facilities; water closet, pit-latrine, KVIP for toilet and Veronica buckets, soaps and bowls for hygiene facilities. The results also revealed that the WASH facilities available in the schools such as water, toilet and hygiene facilities were generally in a fairly good state even though the respondents affirm that some of the facilities require replacement and refurbishment especially for the toilet facilities which some were not very friendly to use according to the account of the pupils and teachers.

The results indicated that the availability and use of WASH facilities in the school has helped the pupils tremendously in undertaking school activities such as entertainment (music and dance), sporting events, school gardening, compound cleaning as well as teaching and learning. The respondents reiterate that, without the availability of the WASH facilities the performance of these very important school activities would have been greatly impeded and in some cases impossible to undertake.

The results also showed that the availability and use of WASH facilities by the pupils have been able to positively affect academic performance where majority of the pupils indicated that they have become more active in class,

some mentioned they now perform much better during the end of term exams and others stated that their cognitive skills have improved considerably due to the ready availability and use of WASH facilities in the schools.

The respondents reveal also that, water is not available sometimes to undertake WASH practices which according to them make them feel very uncomfortable whiles in the school and had to resort to coping strategies to be able to stay in school and partake in academic activities. For water, some of the coping strategies revealed by the pupils include fetching water from nearby home, purchase of water from vendors in the school, bringing water from the house and using friends' water when available.

For sanitation facilities, the pupils indicated that the coping strategies they employ includes use of nearby toilet facilities around the school as well as the use of public toilet facilities. Also, for hygiene facilities, the pupils mentioned they access hygiene facilities from nearby houses whiles others depend on their friends for hygiene facilities.

The results of the study showed that the suggested measures by the pupils to resolve the WASH challenges includes the repair of broken hygiene facilities promptly, renovation of toilet facilities from to time, provision of poly tanks to harvest rainwater and to store water as well as regular provision of hand washing materials.

5.3 Conclusions

From the findings of the study, it can be concluded that WASH facilities are available in the schools and generally are in good state even though some of the facilities requires some attention.

It can also be concluded that the availability and use of WASH facilities in schools by the pupils has positively affected the participation in school activities such as entertainment, school gardening, teaching and learning, sporting events and compound cleaning activities.

It is concluded also that the availability and use of WASH facilities has led to better academic performance by pupils through better end of term exams, becoming more active in class and through improved cognitive skills.

5.4 Recommendations

The following recommendations are suggested for adoption by relevant authorities and institutions in response to the pertinent issues that this study found.

1. Government through the Ministry of Education should resource the Ghana Education Service to help provide modern WASH facilities to basic schools across the country to improve the well-being and development.
2. Non-Governmental Organisations and other community development organisations should supplement the effort of basic schools by helping to provide hygiene facilities like soaps, detergents and hand sanitizers for use by the pupils.
3. The basic schools heads and teachers should endeavor to educate the pupils about the need to take their personal hygiene serious as well as observing of the hygiene protocols.

4. The users of the WASH facilities thus the pupils and their teachers should be sensitized on the use of the WASH facilities in ways to sustain them in order not to cause their constant breakdown and deterioration.



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APPENDIX I

QUESTIONNAIRE

PRESBYTERIAN UNIVERSITY COLLEGE, GHANA

FACULTY OF DEVELOPMENT STUDIES

MSc. ENVIRONMENTAL HEALTH AND SANITATION

The purpose of this questionnaire is to conduct a study on assessing the effects of water, sanitation and hygiene situations on academic performance of basic schools in the Ketu-North Municipality, Ghana

It would be appreciated if you could assist by responding to this questionnaire. You are assured that your responses will be treated confidentially and for academic purpose only.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Gender a. Male b. Female [].
2. Age a. 8-12 b. 13-17 c. 18-21
3. Class/Stage a. 1-3 b. 4-6 c. JHS 1-3
4. How long have you been in the school? a. 1-3 years b. 4-6 years c. 7-10 years

SECTION B: TYPES OF WATER, SANITATION AND HYGIENE FACILITIES IN THE BASIC SCHOOLS ON THE MUNICIPALITY

5. How long have you been in the school?
a. Yes b. No
6. What type of water facility exist in your school?
a. Stand pipes b. Borne hole c. Well

7. What is the state of the water facility in your school?

- a. Good b. Deteriorated c. worn out

8. What type of toilet facility do you have in your school?

- a. Water closet b. Pit-latrine c. KVIP d. Others specify

9. What is the state of toilet facility in the school?

- a. Good b. Deteriorated c. Worn out

SECTION C: ASSESS THE STATE OF THE WATER, SANITATION AND HYGIENE FACILITIES IN THE BASIC SCHOOLS

10. Do you have any hand washing facility in your school?

- a. Yes b. No

11. What type of hand washing facilities are available?

- a. Veronica bucket b. Other

12. What is the state of the hygiene facilities in the school?

- a. Good b. Damaged c. Deteriorate

13. Is water available to undertake sanitation and hygiene practices in the school?

- a. Always available b. Not available c. Available some days

SECTION D: ASSESS THE EFFECT OF WATER, SANITATION AND HYGIENE ON BASIC SCHOOL PUPILS PARTICIPATION IN ACADEMIC ACTIVITIES

14. How long has the water, sanitation and hygiene facilities been in the school?

- a. 1-5 years b. 6-10 years c. 11-15 years d. 15 and above

15. Do you use the water, sanitation and hygiene facilities your school?

- a. Yes I use it regularly b. No I don't use it c. I use it sometimes d. No is not available

16. Do you participate in the following academic activities?

- a. Yes b. No

17. Which of the following activities do you participate in?

- a. Sports b. Entertainment c. Teaching and Learning d. Compound Cleaning d. School gardening

18. Does the availability of water, sanitation and hygiene facilities helps you to undertake the above listed academic activities?

SN	Academic Activities	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Sports					
2	Entertainment					
3	Teaching and Learning					
4	Compound Cleaning					

5	School gardening					
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19. How has the performance of this activities impacted on your academic performance?

- a. I have become more active in class
- b. Nothing has change
- c. I now do better in end of term exams
- d. my cognitive skills have improve

SECTION E: IDENTIFY THE COPING STRATEGIES BEING ADOPTED BY PUPILS TO MEET THEIR WATER, SANITATION AND HYGIENE NEEDS

20. Are there periods in school that water, sanitation and hygiene facilities are unavailable?

- a. Yes b. No

21. If water is not available, how do you cope with it?

- a. Bring water from the house b. Buy water from vendors in the school
- c. Fetch water from nearby homes d. Use water from mates/friends
- e. Others (Specify)

22. If sanitation facilities are not available, how do you cope with it?

- a. Use sanitation facilities in nearby homes b. Use public sanitation facilities
- c. Others (specify)

23. If hygiene facilities are not available, how do you cope with it?

- a. Access hygiene facilities from nearby homes b. Depends on friend's hygiene facilities
- c. Others (Specify)

24. How does the absence of water, sanitation and hygiene facilities affect you're your academic life in school?

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25. How do you reckon the lack of access challenge can be resolved?

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INTERVIEW GUIDE

SECTION A: DEMOGRAPHIC CHARACTERISTICS

26. Age a. 20-30 b. 31-40 c. 41-50 d. 50 and above

27. Sex a. Male b. Female

28. How long have you been teaching in this school?

.....

29. Which class do you teach?

.....

SECTION B: TYPES OF WATER, SANITATION AND HYGIENE

FACILITIES IN THE BASIC SCHOOLS ON THE MUNICIPALITY

30. What type of water, sanitation and hygiene facilities do you have in the school?

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31. What is the state of toilet facility do you have in the school?

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SECTION C: STATE OF THE WATER, SANITATION AND HYGIENE FACILITIES IN THE BASIC SCHOOLS

32. Are there water, sanitation and hygiene facilities in the school?

- a. Yes b. No

33. What is the state of water, sanitation and hygiene in the school?

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SECTION D: EFFECT OF WATER, SANITATION AND HYGIENE ON BASIC SCHOOL PUPILS PARTICIPATION IN ACADEMIC ACTIVITIES

34. How long has water, sanitation and hygiene been in the school?

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35. What academic activities has the students undertake due to the water, sanitation and hygiene facilities in the school.

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SECTION E: COPING STRATEGIES BEING ADOPTED BY PUPILS TO MEET THEIR WATER, SANITATION AND HYGIENE NEEDS

36. What challenges do the pupils face in the use of water, sanitation and hygiene facilities in the

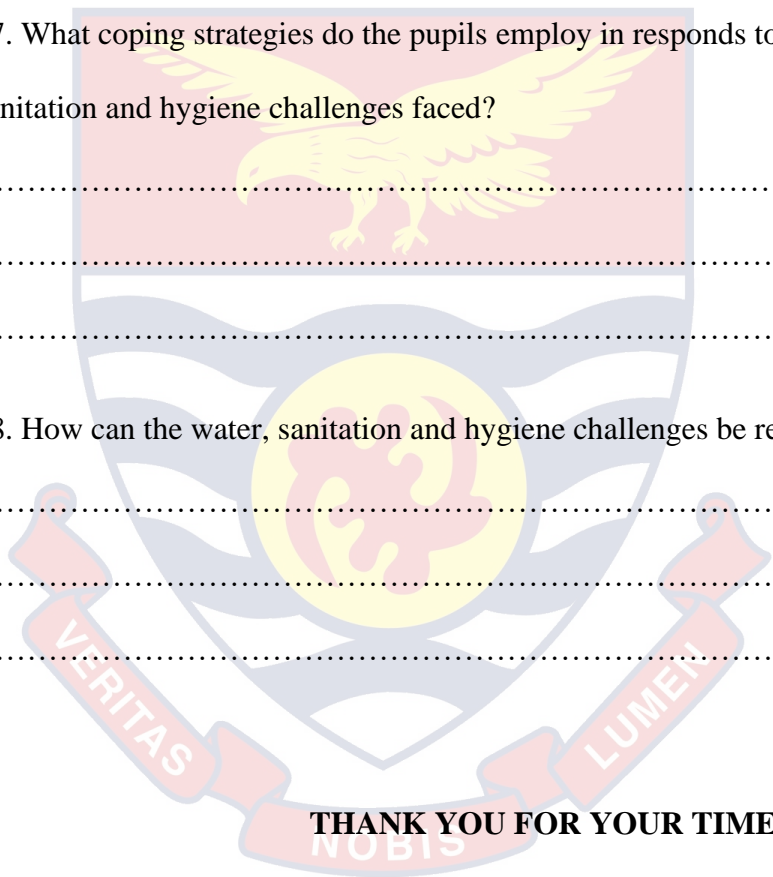
school?.....
.....
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37. What coping strategies do the pupils employ in responds to the water, sanitation and hygiene challenges faced?

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38. How can the water, sanitation and hygiene challenges be resolved?

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THANK YOU FOR YOUR TIME!!