An Exploration of Water, Sanitation and Hygiene Systems Programme in Public Basic Schools: A Case of a Municipality and a District

Wasila Yakubu[1,*], Sethina Annang Danqua[2]
[1]Methodist College of Education, Akyem Asene-Aboabo, Oda, Ghana
[2]Institute of Local Government Studies, Accra, Ghana
[*]Corresponding Author E-mail: silayakubu@gmail.com

Abstract
Safe and learner-friendly water, sanitation, and hygiene (WASH) in schools contribute significantly to improving health, school attendance, and promoting gender equity. Therefore, this study sought to explore the Water, Sanitation and Hygiene Systems (WASH) Programme in public basic schools in the Ga South Municipality and Kassena-Nankana West District-Paga. The study adopted the intrinsic case study design and qualitative research approach. The expert sampling technique was used to select a sample size of fourteen made up of (two school health education programme (SHEP) coordinators, four headteachers, four school-based health coordinators, and four students). Data was collected using a semi-structured interview guide and an observational guide. Data collected was analysed using line coding and content analysis. The findings of the study indicated that the WASH programme has brought enormous benefits to public basic schools. It has ensured the provision of potable water, improved sanitation, and appropriate hygiene practices in schools. Additionally, it has improved enrolment, punctuality, and the regularity of students. Despite these benefits, the water and soap availability, and the WASH facilities' maintenance were the challenges the schools faced. The study, recommends the need for the NGOs and other stakeholders to support the WASH programme financially.

Keywords: Water, Sanitation, Hygiene, Public Basic Schools, Ga South Municipality, Kassena-Nankana West District

1. Introduction

Ghana is one of the most developed nations in Sub-Saharan Africa with an estimated population of over 30 million. Several projects have been carried out to improve the lives of its citizens. Drinking water, sanitation, and hygiene, particularly in the school setting, are crucial to the health and education of children. However, in most schools in developing countries, potable water and sanitation facilities, and hygiene, education programmes are often inadequate (United Nations Development Programme [UNDP], 2011). This exposes children to diarrhoea and other related infections which increase school absenteeism and affect overall performance (Adams, Bartram, Chartier & Sims, 2009). About 85% of the preventable (diarrhoea) diseases in Africa via water are caused by fecal-oral contamination, and diarrheal diseases in children contribute to malnutrition and stunted growth (Grossi, Klimschak, Rechenburg, Shinee & Schmoll, 2016). Lack of good drinking water, poor environmental management, poorly maintained latrines, and hand washing without soap contribute to the prevalence of diseases among children (Adams et al., 2009).

Subsequently, there is no clear urban basic sanitation strategy and plan in Ghana. Despite recent sanitation successes and the introduction of promising technologies, roughly 85 percent of Ghanaians still lack access to improved sanitation (United Nations International Children's Emergency Fund [UNICEF], 2018). The Water, Sanitation and Hygiene Systems (WASH) Programme started in 1985 with the Ghana Rural Water Project to respond to safe water challenges in Ghana funded by USAID and World Vision. According to United States Agency for International Development [USAID] (2018), The Ghana WASH Project is a USAID-funded initiative to improve rural water, sanitation, and hygiene in Ghana. The Ghana WASH Project is implemented by Relief International, Winrock International, and the Adventist Development Relief Agency (ADRA), who are working with local actors and community members to assist in the achievement of Ghana’s national WASH goals.

The WASH Programme has various sub-projects, which are Sesame WASH Up, Procter & Gamble Water purifier, WASH in Disaster Prone Communities, and Universal WASH Project in Asutifi North District (World Vision, 2019). This study is based on education and therefore, Sesame WASH Up will be delved into a bit. According to World Vision (2019), this project is a school-based hygiene behaviour change programme aimed at using play, games, songs, and other interactive learning approaches to encourage children to adopt positive WASH behaviour like regular handwashing. Interventions in WASH are implemented under four key integrated approaches: Hygiene Promotion and Behaviour

Change; Integrated Community Based WASH; WASH in Schools and Health Facilities, and WASH in Rapid Onset/Emergency.

According to Ghana Education Service [GES] (2014), the potential impact of WASH includes; improved primary school attendance, health, and cognitive development; positive hygiene behaviours that may last for life; outreach to families and communities, through the participation of pupils in hygiene promotion; and greater girls' participation in school. According to Butt (2014), adequate and improved water supply is a key issue in WASH. Derben (2019) posits that the WASH facilities and education have led to a reduction in diarrhoea cases as well as infections normally experienced by people. Also, in the Central Region, one school has received an institutional latrine which is seeing immensely positive impacts for its female students (USAID, 2018). What of the Kassena-Nankana West District and Ga South Municipality?

1.2 Problem Statement

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; a sufficient number of toilets for students and teachers that are private, safe, clean, and culturally and gender appropriate; water-use and hand-washing facilities (Adams et al., 2009). The facilities should cater for all, including small children, girls of menstruation age, children with disabilities, and teachers. 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. However, evidence assessing the impact of school-based WASH interventions has been diverse. Two previous reviews of studies of the impact of school-based WASH interventions have shown mixed results on outcome measures such as knowledge, attitudes and practices, school attendance, and health (Jasper et al., 2012; Joshi & Amadi, 2013). Dadebo (2018) conducted a study on hand washing with soap practices in basic schools in Accra. The outcome of the study indicated that of all the pupils' background characteristics investigated, hand washing

with soap practice was significantly associated with age, sex, class, religion of pupils and the availability of hand washing resources. Gyabaah et al (2009) researched sanitation in basic schools in the Tano East district, the results show that out of the 30 selected schools, 53% were without toilet facilities while 83% were without safe water on site. The majority of the schools burned their waste on the campus during teaching periods. Also, the Upper East Region remains one of the most challenging environments for adequate sanitation, hygiene, and nutrition. Children die each year from diarrhoea and other health-related diseases. In 2015, UNICEF reported that 89% of the population in the Upper East Region practice open defecation.

Although similar studies have been conducted globally, few of them have been done in Ghana, and most of these studies focused mainly on sanitation and hygiene in schools. Secondly, having implemented the Water, Sanitation and Hygiene Systems (WASH) programme in public basic schools in Ghana for over a decade, it is worth evaluating the programme impact on students. It is in this regard that the study focused on evaluating the impact of WASH programme in public basic schools in Ga South Municipality in the Greater Accra Region and Kassena-Nankana West District in the Upper East Region.

1.3 Purpose of the Study

The main purpose of the study is to evaluate the impact of WASH programme in public basic schools in the Ga South Municipality and the Kassena-Nankana West District.

1.4 Research Questions

The following research questions guided the study:

1. How did the WASH programme influence quality water, sanitation and hygeine practices in basic schools in the Ga South Municipality and the Kassena-Nankana West District?
2. How has the Ghana WASH programme improved basic school attendance in the Ga South Municipality and the Kassena-Nankana West District?
3. What challenges are encountered by schools that are implementing the WASH programme in the Ga South Municipality and the Kassena-Nankana West District?

As Scharp and Thomas (2019) argue, scholars engaged in critical social science research should assess how their positions and experiences might contribute to their interpretations of people's lived experiences. With this in mind, the researchers who are Ph.D. Students Researchers in Educational Leadership at the University of Education, Winneba, designed the study and led the data collection and analysis processes. One researcher has taught at a basic

school and has a passion for education at that level. One of the researchers is from the Kassena-Nankana West District. Also, another researcher works in a tertiary institution which focuses on local governance and development studies as a quality assurance officer and resides in the Ga South Municipality. The second researcher has interest in water and sanitation issues.

2. Literature Review

WASH in Schools (WinS) in Ghana has been delivered as part of traditional water, sanitation and hygiene promotion projects in communities. In 2010, 56% of schools (Creche/Nursery, Kindergarten, Primary Schools and Junior High Schools) had toilet facilities and 49% had access to water onsite (3IE, 2009). The figures do not indicate the condition and use of the facilities and since 2010, many school WASH facilities have been constructed. Therefore, no accurate data on functional school toilets and water systems are available. The Ghana Education Service of the Ministry of Education (MoE), under whose responsibility WinS falls, has had some challenges in coordinating and harmonising WinS interventions mainly due to this project-based approach which often had little recourse, which hampers GES monitoring of the interventions.

In 2010, the GES developed the School Health Education Programme (SHEP) Policy and Strategy Framework. The SHEP policy and strategic framework offer general direction for school health programming and provide a good context for WinS programming. SHEP comprises four components: (1) disease prevention and control; (2) skills-based health education; (3) food safety and nutrition education; and (4) a safe and healthy school environment. Safe water and sanitation are one of the three key intervention areas under the "safe and healthy school environment" (the other interventions are: a healthy psychosocial school environment and a safe physical environment). So far, various stakeholders and donors have used their project specific standards and strategies (all with the best intentions). To ensure minimum quality, the initiative was taken to develop National Standards and an Implementation Model (GES, 2014).

2.1 Potential Impact of WASH in Schools

Improvements in WASH in schools provide safe drinking water, build good sanitary facilities, and establish appropriate hygiene habits. According to UNICER ROSA (2012), the impacts of such improvements include:

a. Improved primary school attendance, health, and cognitive development;

b. Positive hygiene behaviours that may last for life;
c. Outreach to families and communities, through the participation of pupils in hygiene promotion;
d. Greater girls' participation in school

2.2 Improved Primary School Attendance, Health and Cognitive Development

Learning, hygiene and health are strongly interlinked as children miss school or perform poorly when they are suffering from WASH-borne illnesses. Schools are also places where children get sick. Illnesses can spread very fast in schools where many children are together in classrooms for many hours a day in poor hygienic conditions. Recently it has been estimated that infections that children contract in schools will lead to infections in up to half of their household members. Eighty-eight percent of diarrheal diseases are caused by unsafe WASH conditions (Aiello, Larson & Sedlak, 2008; World Health Organization [WHO], 2008).

For schools, the health focus is generally on diarrhoea, worm infections and respiratory infections because these diseases affect school-age children most and are illnesses which can be drastically reduced through improved WASH conditions in schools. More specifically:

1. The use of improved sanitary facilities reduces the incidence of diarrhoea by 34% (3IE, 2009). Washing hands with soap after toilet use and before eating has been cited as one of the most cost-effective public health interventions because it can reduce the incidence of diarrhoea by almost 40% (3IE, 2009).
2. A study by Rabie and Curtis (2006) comparing results from different countries/studies found that hand washing can cut the risk of respiratory infections by 16%. Although the impact is clear, more research is needed on the expected rate of reduction.
3. All cases of roundworm, whipworm, and hookworm infestation are attributable to inadequate sanitation and hygiene (WHO, 2008). An estimated 47% of children (ages 5-9) in the developing world suffer from worm infestations (Hall, Hewitt, Tuffrey & de Siva, 2008). It is common for a child living in a developing country to be chronically infected with all three types of worms. Such children suffer from malnutrition, intellectual retardation, as well as cognitive and educational deficits. Tests have shown that a child's memory, executive function, language, and problem-solving skills as well as attention span respond positively to periodic deworming. Interestingly, girls display greater improvements through deworming than boys (WHO, 2005).
4. Studies focusing on absenteeism caused by gastrointestinal and respiratory-related illnesses in industrialised countries show that as a result of improved hand hygiene in

schools, the number of days lost can drop between 25 and 50% (Master, Hess Longe & Dickson, 1997).

Absenteeism can also occur when primary school-age children are involved in tasks such as the collection of water from distant sources that are from their homes (these are called "opportunity costs" for attending school). That is the collection of water from sources that are distant from their homes (GES, 2014).

2.3 Positive Hygiene Behaviours that may Last for Life

In a study by Bolt and Cairncross (2004) on the long-term effects of community hygiene education programmes for both adults and children it was found that, contrary to general belief, people are not reverting to earlier practices as years go by. The data demonstrate that hygiene behaviours, if taught well, are sustained at least 7-9 years beyond the end of an intervention. Researchers assume that when hand washing becomes part of daily routines in childhood it does not easily fade (Curtis, Danquah & Aunger, 2009). Therefore, schools form an ideal setting for skills-based hygiene education, where children can learn and sustain life-long hygiene practices.

2.4 Outreach to Families and Communities, through the Participation of Pupils in Hygiene Promotion

When school-based programmes are designed in a coordinated way with community-based programmes, children can become 'agents of change' and pass on the health and hygiene information learned at school to family and community members. This benefits the entire community. The motivation to build and use toilets in the homes of the children depends on having successful, well-maintained toilets within the schools. There is some indication that if institutions (schools, health centres etc.) continue to provide information to families; this will lead to better hand-washing practices (India IRC, 2008).

School-based studies have demonstrated the potential for influencing hand-washing behaviour through membership of well-set-up safe-water-clubs, peer-to-peer teaching, classroom sessions with focused training materials, and role-playing or songs (O'reilly et al., 2008, Bowen et al., 2007; Onyango-Ouma, Aagaard-Hansen & Jensen, 2005). These studies demonstrate that while teachers can successfully transfer knowledge to pupils, motivated pupils can also influence family members by sharing this information, which in turn may change behaviour at the community level.

2.5 Greater Girls' Participation in School

The lack of proper knowledge, lack of water and sanitation facilities, lack of privacy, lack of sanitary pads (leading girls to use and re-use pieces of cloth), hinder proper menstrual hygiene practices. This can compromise the health and the quality of education of adolescent girls.

If adolescent girls (and female teachers) attend schools during their menstruation, the availability of gender-appropriate toilets and water supplies is essential to comfortably change and dispose of sanitary pads and washing in private (Kirk & Sommer, 2006). If not already motivated by religious and cultural beliefs that staying home during menstruation is normal, the absence of facilities means that for many girls it is preferable to stay at home during menstruation and not attend school. At home, they do not have to worry as much about sanitary protection, or about having adequately concealing clothing. This might add up to 30 to 40 school days missed each year. Studies did not find a direct link between menstruation and drop-out from school but did conclude that absenteeism has a profound impact on girls' potential for success in school. In many schools, girls (and boys) face the threat of (sexual) abuse or violence from both male teachers and older male pupils. Studies show that girls are most likely to be abused on their way to or from school, in or near toilets, in empty classrooms, and other isolated places. This shows the importance of constructing girls' toilets at safe locations.

Every additional year that a girl spends in school is crucial. For those girls who eventually become mothers, each additional year of education brings down the under-five mortality rate of their children by up to 10%. Add issues of dignity and empowerment, and it becomes clear that better sanitation is at the heart of better lives for children and women (Kenya IRC, 2008).

2.6 Challenges of the Inadequacy of WASH Facilities in Schools

Lecky, Kostkova, and McNulty (2011) posit that the most frequently reported issues related to WASH are inappropriate planning; problems with physical infrastructure; a lack of consumables; poor cleaning and maintenance; and inadequate operation of water supply, sanitation and hygiene services. Pupil perception surveys reveal frequent dissatisfaction due to insufficient cleaning and maintenance, which is not always acknowledged by school management and staff, hindering healthy behaviors and promoting antisocial behaviour, such as vandalism. According to Lecky et al. (2011), access to water for drinking and hand-washing in schools is often not ensured. Water may be absent, intermittent, unsafe, and/or hard to access, far away, or not allowed in class. Insufficient numbers or inadequate hand-washing facilities and overly cold temperatures also hinder hand-washing practices.

Lundblad and Hellström (2005) retain that hygiene management and practice are not always adequate in schools. Toilets are frequently reported to be dirty, overcrowded, and smelly; soap, toilet paper, drying devices, and disposal bins are insufficient. As a consequence, toilet avoidance is common among pupils and a lack of adequate hygiene education means that the practice of healthy behaviour is not promoted.

Fadda, Rapinett, Grathwohl, Parisi, Fanari and Calò (2012) maintain that sanitation is not always adequately provided and maintained or accessible. Sanitation facilities may be absent or inadequate to pupil numbers and needs. Use of sanitation facilities is hindered by insufficient maintenance and cleanliness, poor building materials, lack of privacy, cold temperatures, and poor illumination. They state that disparities and inequalities permeate WASH accessibility in schools. Children with disabilities do not have equal access to WASH facilities in schools. Girls' needs, especially during menstruation, are often not considered. Members of minority groups in rural areas or specific regions do not have equal access to WASH facilities in schools and are neglected by policies and funding programmes. Fadda et al. (2012) again stipulate that Inadequate WASH affects children's health, well-being and cognitive performance. Important WASH-related topics like menstrual hygiene management, hygiene education and WASH-related health assessments still lack prioritization (Jasper et al., 2012). The studies undertaken, although limited in number, indicate a clear association between children's health and WASH conditions in schools.

3. Research Methodology

Methodological issues are underpinned by theoretical and philosophical issues. In research, the two theoretical issues relate to ontology and epistemology (Gray, 2004; Sikes, 2004). Ontology refers to our assumptions about how we see the world and epistemology refers to our assumptions about the best way to study the world. Kusi (2012) posits that one's ontological assumption/s and epistemology position/s are linked to the paradigm that informs one's study. The researcher believes that social reality is not singular or objective, but is rather shaped by human experiences and social contexts (nominalist ontology), and is, therefore, best studied within its socio-historic context by reconciling the subjective interpretations of its various participants [constructivist epistemology] (Anol, 2012). Therefore, the philosophical paradigm which underpins the study was that of interpretivism. The interpretive paradigm argues that social reality is created jointly through meaningful interactions between the researcher and participants (Grbich, 2007; Rugg & Petre, 2007).

For Anol (2012) they are well-suited for exploring hidden reasons behind complex, interrelated, or multifaceted social processes although this type of research tends to be more time and resource-intensive than positivist research in data collection and analytic efforts. This study fits into the interpretive paradigm. As "all educational research needs to be grounded in people's experience' and interpretivists' explore the meanings of events and phenomena from the subjects' perspectives" (Morrison, 2007, p 26).

3.1 Research Approach

The interpretive paradigm relies heavily on qualitative data. Consonant with the interpretivist paradigm, a qualitative approach to gathering data and making sense of it was adopted (Bryman, 2001). Interpretivism favours a more qualitative approach where the meaning of research is negotiated between the researcher and research participants.

As a study, which evaluate the impact of the WASH Programme, qualitative research becomes an effective tool for understanding how different stakeholders view the contributions of the programme toward education. According to Patton (2002), qualitative methods are often used in evaluation because they tell the programme's story by capturing and communicating the participants' stories. Creswell (2005), also pointed out that qualitative study is used to collect text-based information, to obtain answers to broad, open-ended questions, and to obtain information, viewpoints, and opinions from a population within a specific and complex setting.

Research design is a comprehensive plan for data collection in an empirical research project. It is a 'blueprint' for empirical research aimed at answering specific research questions or testing specific hypotheses and must specify at least three processes: (1) the data collection process, (2) the instrument development process, and (3) the sampling process (Anol, 2012). Creswell (2008) argued that the decision to adopt a particular research design lies in the worldview assumptions the researcher brings to the study, the procedures/strategies of inquiry, and specific methods of data collection, analysis, and interpretation. Merriam (2009) enumerated the following six approaches to qualitative research: ethnography, grounded theory, narrative analysis, critical research, and case study. A case refers to a unit of analysis such as a school, a university, a region, a locality, or a country (Henn, Weinstein & Ford, 2006). Given the focus of this study, the intrinsic case study design was found to be most appropriate to conduct this study, since the researchers have an interest in the case under study. According to Kusi (2012), a case study can be categorized into three broad types

namely, intrinsic, instrumental, and collective case studies. The intrinsic case study is conducted for the genuine interest of the researchers in studying a unique phenomenon.

3.2 Rational for Research Design

For any investigation, the selection of an appropriate research design is crucial in enabling one to arrive at valid findings. Research design serves as a guide that helps to avoid a situation in which the evidence does not address the research questions (Yin, 2003; Bryman, 2012). Yin (2003) highlighted five important components of a case study research design as follows:

I. A study's question provides clues to the appropriate research strategy to use;
II. Its proponent directs attention to issues that should be examined within the scope of the study;
III. It's unit of analysis, thus defining what a case is;
IV. The logic of linking data to the proposition and;
V. Criteria for interpreting the findings.

3.3 Description of the Study Area

3.3.1 Ga South Municipality

The Ga South Municipality is located in the South Western part of Greater Accra. It lies within Latitudes 5°47'30"N and 5°27'30"N and Longitudes 0°31'30"W and 0°16'30"W. The Municipality shares boundaries with Upper West Akim to the North, Weija-Gbawe Municipal Assembly to the East. The Assembly also shares boundary Gomoa East to the South-West, Awutu-Senya East to the West, Awutu-Senya West to the North West and the Gulf of Guinea to the South. It occupies a land area of approximately 385.23 sqm with a potential population density of 769.6pha, with about 60 settlements with a population above 3000. There are hundreds of satellite communities and hamlets in the Municipality. The municipality has sixty-eight basic schools (District SHEP Coordinator, 2023).

3.3.2 Kassena-Nankana West District

The Kassena-Nankana West District (KNWD) is one of the districts in the Upper East Region of Ghana. It has Paga as its district capital. It was established by LI1855 in 2007 and inaugurated on 29th February 2008. It was carved out of the then Kassena-Nankana District Assembly. The KNWD is located approximately between latitude 10.97° North and longitude 01.10 West. The district has a total land area of approximately 1,004 sq. km. The population of the district as indicated by the 2010 Population and Housing Census was 70,667. This

number consists of 34,747 (49.2%) males and 35,920 (50.8%) females with a growth rate of 1% and a population density of 70 persons per sq km.

The district capital, (Paga) is located along the trunk road to Burkina-Faso from the Upper East Region. Ghana and Burkina-Faso share a border in this town. The KNWD is noted on the world map for its famous tourist sites such as The Zenga and Chief Crocodile Ponds, and The Pikworo Slave Camp all located in Paga (The KNWD Assembly, 2014).

3.4 The population of the Study

According to Kusi (2012), a population is a group of individuals or people with the same characteristics and in whom the researcher is interested. The Ga South Education directorate comprises sixty-eight public basic schools. Out of the sixty-eight schools twenty-five have benefited from the WASH project under GAMA. Ten more schools have been enrolled in the WASH project being supported by UNICEF/Denmark and are currently undergoing a sensitization workshop. The KNWD has sixty-eight primary and KG schools and fifty-five junior high schools. Twenty-three schools in the district benefited from the CRS ISHINE programme sponsored by CRS, nineteen schools benefited from the WASH 4PH programme by WaterAid and Right to Play. Also, nine schools benefited from DPC project sponsored by UNICEF and forty-five schools benefited from WinS project by WVI.

3.5 Sample Size and Sampling Procedure

A sample is the proportion of a universe or population selected for observation and analysis (Asamoah-Gyimah & Duodu, 2007). A purposive sampling technique was used to identify and select the four public basic schools that benefited from the WASH programme. Two schools from each of the study areas. According to Ary, Jacobs, Razavich, and Sorenen (2006), purposive sampling allows for the selection of information-rich participants and Merriam (2009) also pointed out that the criteria you establish for purposive sampling directly reflect the purpose of the study and guide in the identification of information. Fourteen participants (Two school health education programme (SHEP) coordinators, four headteachers, four school-based health coordinators, and four students) were purposively selected and interviewed for information on the impact of the WASH programme in public basic schools.

3.6 Research Instruments

Merriam (2009) outlined instruments for the case study as participant observation, interviews, document analysis and field notes accounts, and notes and memos. Tools to collect qualitative data include documentation, archival records, interviews, direct observations, participant

observation, and physical artifacts (Yin, 2014). Thus, an observations checklist and interviews (semi-structured) guide were used to collect data for the study.

3.6.1 Observation

Observation checklists are instruments that are best for collecting facts about people's places of work and gaining insight into an event (Dampson & Mensah, 2014). The observation schedule consisted of checklists adapted from UNICEF and World Health Organization (2016). The observation checklist consisted of three parts, Water, Sanitation, and Hygiene practices.

3.6.2 Interview

Interviews are one-on-one interactions that purposely "explore views, experiences, beliefs and /or motivations of individuals on specific matter" (Gill, Stewart, Treasure & Chadwick, 2008, p. 292). The importance of using interviews in collecting data cannot be over-emphasized. Open-ended questions and probes yield in-depth responses about people's experiences, perceptions, opinions, feelings, and knowledge. Data consist of verbatim quotations with sufficient context to be interpretable (Patton, 2015). The interview guide was created using knowledge of the WASH programme. The interview guide was made up of four main parts, the first part solicited background information, and the other parts solicited information on Water, Sanitation, and Hygiene practices.

3.7 Research Rigour

According to Brigitte (2017), reliability and validity are two key aspects of all research. Researchers assert that the rigor of qualitative research equates to the concepts of reliability and validity and all are necessary components of quality. The rigor of qualitative research continues to be challenged even now in the 21st century. Being rigorous is possible in case studies through enhanced methodological justification and integrity (Gaikwad, 2017). Anol (2012) is of the view that because interpretive research is based on a different set of ontological and epistemological assumptions about social phenomenon than positivist research, the positivist notions of rigor, such as reliability, internal validity, and generalizability, do not apply in a similar manner. However, Lincoln and Guba (1985) provide an alternative set of criteria that can be used to judge the rigor of interpretive research, which are dependability, credibility, confirmability and transferability. The researchers observed the sampled schools at different times and arrived at similar conclusions. Triangulation of data from the interviews and observation ensured the credibility of the study. Transferability was enhanced by using the purposive sampling method and providing a thick

description and robust data with a wide possible range of information (Brigitte, 2017), which this study did.

3.8 Data Collection Method

The face-to-face interview was conducted with the fourteen participants. Observation and interview guide was used to elicit information from participants on WASH facilities and services provided in the basic schools, disposal of waste in the schools, rate of infections, how the WASH activities have improved health conditions, and its impact on attendance.

3.9 Data Analysis

Data for this study were analysed using line coding and content analysis (Cooper & Schindler, 2012), where the researcher examined the participants' responses, and then 'thematic units' were identified. These units formed the basis for answering the guiding questions and allowed for comparison with the findings of other research. The analysis was reported using a narrative style with embedded direct quotations.

3.10 Ethical Consideration

In research studies, researchers are expected to cautiously and ethically analyze any ethical concerns (Jack & Norman, 2003). The researcher adhered to ethical guidelines governing human subjects in research. Before this study was conducted, permission was obtained from the Ga South Municipal Education Directorate, the Kassena-Nankana West District Education Directorate, and the Headteachers of the sampled school. Secondly, participants gave their consent to be part of this study. Also, the names of participants were not released in the research. Participants were informed about subject anonymity and confidentiality. The researcher conducted the study without disturbing the learning atmosphere of the schools.

4. Results and Discussion

This section presents the results, analysis, and interpretation of data for this study. The codes generated included pseudonyms which were given to participants to maintain anonymity.

4.1 Profile of Participants

Participant 1 (GSHEP): *She is the SHEP coordinator in the Ga South Municipality and has held that position for three years.*

Participant 2 (GH1): *He is a headteacher in the Ga South Municipality and has held that position for six years.*

Participant 3 (GH2): *She is a headteacher in the Ga South Municipality and has held that position for two years.*

Participant 4 (GSH1): *She is a school-based health coordinator in the Ga South Municipality and has been teaching in the school for seven years.*

Participant 5 (GSH2): *He is a school-based health coordinator in the Ga South Municipality and has been teaching in the school for five years.*

Participant 6 (GSTU1): *She is a student in the school for two years in the Ga South Municipality.*

Participant 7 (GSTU2): *He is a student in the school for four years in the Ga South Municipality.*

Participant 8 (KSHEP): *He is the SHEP coordinator in the Kassena-Nankana West District and has held that position for four years.*

Participant 9 (KH1): *She is a headteacher in the Kassena-Nankana West District and has held that position for three years.*

Participant 10 (KH2): *She is a headteacher in the Kassena-Nankana West District and has held that position for six years.*

Participant 11 (KSH1)*: He is a school-based health coordinator in the Kassena-Nankana West District. He has been teaching in the school for five years.*

Participant 12 (KSH2)*: He is a school-based health coordinator in the Kassena-Nankana West District. He has been teaching in the school for five years.*

Participant 13 ((KSTU1)*: He is a student in the school for three years in the Kassena-Nankana West District.*

Participant 14 (KSTU2): *She is a student in the school for five years in the Kassena-Nankana West District.*

4.2 Influence of the WASH Programme on Quality Water, Sanitation, and Hygiene Practices in Public Basic Schools

In this section, responses of participants about how the WASH programme has influenced the quality of water, sanitation, and hygiene in their schools are discussed. It also presents the findings of the interviews conducted as well as the observations made.

4.2.1 Water

According to Butt (2014), adequate and improved water supply is a key issue in WASH. During the interview, participants said they have a source of water, which was the borehole, including latrines, and handwashing facilities at their schools. However, school-based water treatment was not done to keep the water safe. This conforms to the study conducted by

Amuah (2021) in the Wa Municipality. His study revealed that school-based water treatment and regular water quality analyses were not done to ascertain the suitability of the available water in schools.

According to GH1, their school has *"Twelve toilets, five rooms for boys, five rooms for girls, two rooms for teachers and one for physically challenge"*. For G H 2 *"the school does not do anything to the water from the main source to make it safe to drink, some of the children fill their water bottle from home while others buy sachet water"*. "*We have mechanised borehole powered by solar, but it's been spoilt since 2020"* GSH 2 said.

KSH1 had this to say "*The WASH programme has been a benefit to the students and we the teachers ourselves, we now have borehole water, two KVIP latrines, and several handwashing facilities at the school"*. KSTU 2 told us *"the school has borehole water, KVIP toilets, and handwashing facilities"*. KH1 also expressed his views that *"we have borehole water, toilets, and handwashing facilities, but the school does not do anything to the water from the main source to make it safe for drinking"*. K SHEP mentioned that "*through the Catholic Relief Services, Water Aid and World Vision, some schools in the district have gotten latrines, boreholes and handwashing facilities"*.

From the analysis of documents, it was revealed that these schools were supported by NGOs like UNICEF and World Vision Ghana to acquire these facilities. Development Partners and international NGOs like UNICEF, World Vision Ghana, PLAN Ghana, Safe Water Network Ghana, Global Communities, WaterAid Ghana, and many more continue to support government efforts by providing WASH facilities to basic schools across the country (Coalition of NGOs in Water and Sanitation [CONIWAS], 2017).

4.2.2 Sanitation

It was observed that soap and water were available at the handwashing facilities. Culturally appropriate anal cleansing materials were also available at the schools. Also, latrines were cleaned regularly. Not only that, girls in the schools were taught menstrual hygiene management. While other schools made WASH facilities available to learners with disabilities other schools did not. Various project reports by Civil Society Organisations (CSOs) indicate that several school WASH facilities do not meet the minimum standards (CONIWAS, 2017). It appears that is the case in some schools in Ghana.

GSTU1 mentioned that they *"have veronica bucket, soap and water for washing of hands"*. *"The students' toilets are cleaned daily"* GSTU2 added.

The GSHEP coordinator indicated that he educates students every Wednesday after worship on personal hygiene and general cleaning and washing of hands under running water. Additionally, girl child club members are educated on how to use sanitary pads and change over.

GH2 said *"all students use the same toilet facilities"* and for GH1 *"there is a small toilet hole for the smallest children and covered bins for disposal of menstrual hygiene materials in the girls' toilet"*

Another participant KSHEP said that *"soap and cleaning materials are supplied to schools to support the WASH programme".* Adding his voice, KSH1 commented by saying "*the menstrual hygiene, the situation with that too has gone down because students have been thought how to take good care of themselves during their menstrual period.* KSH2 also indicated that *"there are changes in terms of sanitation around us, we have seen that there's a lot of improvement. Now that these things are available after going to the toilet you use the Veronica buckets with soups. you know because of the Coronavirus, now they give us a lot of liquid soaps". "The school has no toilet facility that is accessible to the smallest children and those with limited mobility or vision"* KH2 added.

These findings contradict Lundblad et al. (2005) assertion that hygiene management and practice are not always adequate in schools and toilets are frequently reported to be dirty.

4.2.3 Hygiene

From the observation, the schools had adequate handwashing facilities and they properly disposed of waste. All of them indicated they burn the waste generated daily after school with an improvised incinerator.

GH2 had this to say *"The Municipal Assembly used to pick the solid waste; however, they are not punctual hence the waste is burnt after school".*

For the Kassena-Nankana West District, KSH2 commented that "*Garbage from the school is kept in a pit and burnt"*

Again, participants were asked about the rate of infections among students in the school before the WASH programme. One of the participants who joined the school after the WASH Programme indicated there was no infection (*GSTU 1*). However, a participant who has been with the school before the inception of the WASH programme noted infection rate was not very high (*GH1*). Students usually fall sick before the WASH Programme but currently, students are putting up good hygiene practices (*KH1*).

Again, participants were asked about the kind of diseases that affected the students before the WASH programme. They all indicated the students use to have diarrhoea cases and skin diseases.

KSH1 mentioned that *"The WASH programme has been able to prevent a majority of the communicable diseases in the area like cholera, diarrhoea, dysentery, typhoid, and all these things. Even though it has not eradicated it completely but it has reduced it by 80 to 85%. And then it has also encouraged personal hygiene because I remember some time ago when I came to the school, the school was not all that neat, but through the WASH programme we have been able to keep our toilet facilities, even the classrooms, the students themselves neat. We have been able to maintain personal hygiene. And then they have been taught proper disposal of waste and they don't throw rubbish away anyhow. In 2018 we received the neatest school award in Upper East".*

Lastly, participants were asked how the WASH activities improved the health conditions of the students. All participants noted that washing of hands with soap has helped improved the health conditions of the students in the school. The training given to the children by the SHEP coordinator on personal hygiene has also helped improve their health condition to a large extent.

According to GH1 "Group hand washing activities are done (demonstrated) daily during morning assembly". "*The WASH activities have improved the personal hygiene of the pupils and environmental sanitation of the school hence the rate of sickness has reduced. For instance, the children have stopped practicing open defecation"* (GH2). *"I think hand washing of students and education on personal hygiene (brushing of teeth, bathing very well) has helped improve health conditions" (GSHEP).*

These quotations reflect the Ghana Education Service's potential impact. According to Ghana Education Service (2014), the potential impact of WASH includes; improved primary school attendance, health, and cognitive development; and positive hygiene behaviours that may last for life.

4.2.4 Improved Basic School Attendance

Enrolment, punctuality, and regularity have improved significantly as a result of the presence of WASH facilities like latrines, boreholes, and handwashing devices. Further, the WASH services provided by the school SHEP coordinator by training the students on how to use the toilet facilities and having separate toilets room for boys and girls with a changing room has

also helped in this regard. This corroborates Moe and Rheingans (2006) study which noted that improved toilet sanitation positively imparts health and school attendance.

"*The presence of toilet facility in the school has helped to monitor students who use it as an excuse and miss class and run away from school"* (GSTU1). *"Yes, because absenteeism was high in the school before the introduction of the WASH programme but now it is low"* (G SHEP). *"Yes it has improved attendance of students (95%) and teachers (98%) It has also improved enrolment rate in the school by 30%"* (GSH2).

"It has reduced absenteeism among female students as the latrines provided has pad changing rooms for the girls to change their sanitary pads when they're menstruating, so they no longer remain at home when menstruating" (KSH2). *"The students are now healthy and attend school regularly because cases of diarrhoea, cholera, typhoid and other communicable diseases has reduced as a result of the hand hygiene campaign carried out through the activities of the school health clubs"* (KSH1). *"Students were also screened for anaemia and skin diseases and those diagnosed were referred for immediate treatment"* (KH1). *"Food vendors and cooks under the school feeding programme were screened and certified to cook and handle food in the intervention schools, this was a step to ensure that whatever students are consuming is wholesome. Which will ensure that they won't fall ill and miss school"* (KSHEP).

4.3 Challenges Encountered by Schools that are Implementing the WASH Programme

Lecky et al. (2011) posit that the most frequently reported issues related to WASH are inappropriate planning; problems with physical infrastructure; a lack of consumables; poor cleaning and maintenance; and inadequate operation of water supply, sanitation and hygiene services. From the findings obtained, certain challenges were observed. The major challenges facing the WASH programmes were the availability of water and soap and the maintenance of the WASH facilities. When the participants were asked about the challenges their schools encounter when implementing the WASH programme, they expressed the following;

GH1 noted that *"the motor they use to pump water into the tank has been stolen hence they cannot use the borehole water. They buy water for an amount of two hundred and fifty Ghana cedis a term which they cannot continue due to lack of funds. Again, because the school is not fenced the community members break in and use the facility".* GSH 2 mentioned that *"the school is unable to organised club activities because of the shift system and this affects the sensitization part of the programme. Another participant noted that students have to fetch water daily from the public tap for use and because of that some students do not come to*

school on time". "*Some of the juniors do not come to school on time because they do not want to send/ask to fetch water" (GSTU1).* GSH2 added that *"The pump uses solar and poses a challenge. The water is not flowing because the pump is spoilt and has not been fixed for over a year now*". *"Lack of maintenance of the facilities. The facility is out of use for the past year. Because the students do not pay fees it has become difficult to fix the toilet facilities. I recommend the authorities go round to inspect the facilities and repair the spoilt ones"* (GH2).

KSH1 said "*Technically I will put it as the negative side of the WASH programme, sometimes proper hygiene goes with water and soap, so you see, there is only one borehole and the borehole is also used by the communities around, so getting water sometimes becomes a bit difficult. And also, because students have been taught to wash their hands all the time, they waste a lot of water because every minute they also want to wash their hands even though it's a good thing. Sometimes because it's a public thing, we have to wait for resources and other things, getting soap to wash our hands, tissue papers, and other things, sometimes, we teachers have to volunteer and buy these ourselves. Also, you see the washing devices, some of them are a little bit technical and then they also need maintenance and repair. Some of them when they break down because these days the schools are not having finances to repair them the function of it will be discontinued*". KSH2 Indicated that "*sometimes we need brooms, cutlasses or brushes for cleaning those kinds of things sometimes soap and at times our borehole has to breakdown and we will need some money to maintain them. So, I think it's capital intensive, so probably I think that particular side is something that is affecting the project"*. KH2 also commented that *"the school has a challenge with a frequent water supply and acquiring gallons for hand washing"*

According to CONIWAS (2017), school toilets and water facilities can only be maintained and operated effectively when there is an adequate budgetary allocation for that purpose.

4.4 Major Findings of Both Areas

One study area was in the Greater Accra Region and the other from the Upper East Region, despite the difference in geographical, economic, and educational status, the findings of both areas were similar. The major findings are:

1. The WASH facilities and services in the school have helped improve the health conditions of the students in the study areas. The WASH project has helped improve students' hygiene and environmental sanitation. The provision of a place of convenience has helped reduce open defecation.

2. The WASH programme has helped improve school attendance (students 95% and teachers 98%) and enrolment in the school.
3. The schools have financial challenges hence unable to maintain the WASH facilities (water pumps, washing facilities, and acquiring materials like detergents).

4.5 Limitations and Suggestions for Further Study

This study selected participants from schools that had support from NGOs. However, including headteachers, students and teachers from schools that did not receive any form of support would have brought a different dimension to the study. Finally, future studies should also focus on how the practices of basic schools reflect the National Implementation Model for WASH.

5. Conclusion

In this study, it has been shown that the WASH programme is very beneficial to basic schools. The Programme ensures the provision of potable water, improved sanitation, and appropriate hygiene practices in schools. To provide an environment for learning to improve, school attendance and academic performance, WASH in schools must be a focal point for everyone (Amuah, 2021). It is recommended that SMC/PA and stakeholders' engagement should be enhanced so parents and NGOs can come and support to maintain the facilities. Also, Sponsors of the WASH programme can support the school financially to maintain the facilities. Furthermore, the Government should increase capitation grants to take care of health and life issues in the school. The WASH programme meetings and workshops for SHEP coordinators should include executives of PA so they can brief and sensitise parents on the WASH activities. Moreover, WASH facilities should be provided per the guidelines for WASH.

References

3IE. (2009). Water, sanitation and hygiene interventions to combat childhood diarrhoea in developing countries International Initiative for Impact Evaluation (3IE). Synthetic Review 001. Hugh Waddington, BirteSnilstveit, Howard White, Lorna Fewtrell.

Adams, J., Bartram, J., Chartier, Y., & Sims, J. (2009). Water, Sanitation and Hygiene Standards for Schools in Low-cost Settings. World Health Organization/UNICEF. Retrieved from http://www.who.int/water_

Aiello, A. E., Larson, E. L., & Sedlak, R. (2008). Personal health. Bringing good hygiene home. *American Journal of Infection Control*. *36*(10), 152-165.

Amuah, E. (2021). WASH in Selected Basic Schools and Possible Implications on Health and Academics: An Example of the Wa Municipality of Ghana, West Africa. *American Journal of Environmental Science and Engineering*, *5*, 15-20.

Anol, B. (2012). Social Science Research: Principles, Methods, and Practices. Textbooks Collection. 3. Retrieved from http://scholarcommons.usf.edu/oa_textbooks/3

Ary, D., Jacobs, L. C., & Razavieh, A. (2006). *Introduction to research in education (4th ed.)*. Chicago: Holt Rinehart and Winston.

Asamoah-Gyimah, K., & Duodu, F. (2007). *Introduction to research methods in education.* University of Education, Winneba: Institute for Educational Development and Extension (IEDE).

Bolt, E., & Cairncross, S. (2004). Sustainability of hygiene behaviour and the effectiveness of change interventions. Lessons learned on research methodologies and research implementation from a multi-country research study. IRC International Water and Sanitation Centre, Delft, the Netherlands.

Bowen, A., Huilai, M., JianmingOu Ward B., Timothy, L., Eric M., Robert, M. H., & Stephen, L. (2007). A cluster-randomized controlled trial evaluating the effect of a hand washing-promotion program in Chinese primary schools. *The American Journal of Tropical Medicine and Hygiene (76th ed.)*, 6, 1166-1173.

Brigitte, C. (2017). Rigor or Reliability and Validity in Qualitative Research: Perspectives, Strategies, Reconceptualization, and Recommendations. *Dimensions of Critical Care Nursing*, *36*(4), 253-263.

Bryman, A. (2001). *Social research methods*. Oxford: Oxford University Press.

Butt, N. (2014). Evaluating Water, Sanitation and Hygiene (WASH) affecting school children performance in Lahore and Islamabad, Pakistan. Doctoral dissertation; Albert-Ludwigs Universität Freiburg.

Coalition of NGOs in Water and Sanitation. (2017). CONIWAS' position on the provision and management of water, sanitation and hygiene (WASH) facilities in basic schools in Ghana. Retrieved from file:///C:/Users/User/Downloads/CONIWAS_WASH_Schools_Ghana_2019.pdf

Cooper, D. R., & Schindler, P. S. (2014). *Business research methods (12th ed.).* McGraw-Hill Irwin: Boston.

Creswell, J. W. (2005). *Educational research: planning, conducting and evaluating quantitative and qualitative research (2nd ed).* Upper Saddle River, NJ: Pearson Prentice Hall.

Creswell, J. W. (2008). *Research design: Qualitative, quantitative and mixed methods approaches (3rd ed.).* Thousand Oaks, C.A: Sage.

Dadebo, J. O. (2018). Handwashing with soap practice among primary school pupils at Abokobi Presbyterian Primary school, Abokobi-Accra. University of Ghana. Retreived from http://ugspace.ug.edu.gh

Dampson, D. G., & Mensah, D. K. D. (2014). *A practical guide to action and case study research.* Amakom-Kumasi: Payless Publications Limited.

Derben, H. (2019). Improving child birth with safe water and sanitation facilities for every child, a clean environment. Retrieved from https://www.unicef.org/ghana/stories/improving-child-birth-safe-water-and-sanitation-facilities

Fadda, G., Rapinett, D., Grathwohl, H., Parisi,, K., Fanari, J., & Calò, A. (2012). Impact of Water, Sanitation, and Hygiene Interventions on Improving Health Outcomes among School Children. *Journal Environ. Public Health.*

Gaikwad, P. (2017). Including Rigor and Artistry in Case Study as a Strategic Qualitative Methodology. *The Qualitative Report*, 22(13), 3431-3446. https://doi.org/10.46743/2160-3715/2017.3436

Ghana Education Service. (2014). WASH in Schools National Implementation Model. Retrieved from https://www.washghana.net/sites/default/files/Ghana

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal, 204(6),* 291-295.

Gray, D. E. (2004). *Doing research in the real world*. London Sage: Publications Ltd

Grbich, C. (2007). *Qualitative Data Analysis: an introduction*. London: Sage Publications Limited.

Grossi, V., Klimschak, E., Rechenburg, A., Shinee,. E, & Schmoll, O. (2016). The situation of water, sanitation and hygiene in schools.

Gyabaah, D., Awuah, E., & Ackerson, N. O. B. (2009). Sanitation in Basic Schools- A Case Study in Tano South District. Retrieved from https://www.researchgate.net/publication/228439425

Hall, A., Hewitt, G., Tuffrey, V., & de Siva, N. (2008). A review and meta-analysis of the impact of intestinal worms on child growth and nutrition. *Maternal Child Nutrition*, *4*(1), 118-236.

Henn, M., Weistern, M., & Ford, N. (2009). *A critical introduction to social research (2nd ed.).* Sage Publication Ltd.

India IRC. (2008). The sustainability and impact of school WASH in Kerala, Southern India.

Jack, R. F., & Norman, E. W. (2003). *How to Design and Evaluate Research in Education (5th ed.)*. Boston: McGraw Hill Publishers.

Jasper, C., Thanh-Tam, L., & Bartram, J. (2012). Water and Sanitation in Schools: A Systematic Review of the Health and Educational Outcomes. Int. J. Environ. Res. Public, 9, 2772–2787. [CrossRef] [PubMed].

Joshi, A. & Amadi, C. (2013). Impact of Water, Sanitation, and Hygiene Interventions on Improving Health Outcomes among School Children. J. Environ. Public Health [CrossRef] [PubMed].

Kenya IRC. (2008). The sustainability and impact of school WASH.

Kirk, J., & Sommer, M. (2006). "Menstruation and body awareness: linking girls 'health with girls' education" Gender and Health Special. Royal Tropical Institute (KIT), Amsterdam, Netherlands.

Kusi, H. (2012). *Doing qualitative research: a guide for researchers.* Accra-New Town: Emmpong Press.

Lecky, D. M., Kostkova, P., & McNulty, C. A. M. (2011). What are school children in Europe being taught about hygiene and antibiotic use? *J Antimicrob Chemother. 66* (5), 13–21.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.

Lundblad, B., & Hellström, A. L. (2005). Perceptions of school toilets as a cause for irregular toilet habits among schoolchildren aged 6 to 16 years. *J School Health. 75*(4):125–8.

Master, D., Hess Longe, S. H. & Dickson, H., (1997). Scheduled hand washing in an elementary school population. *Family Medicine, 29*(5), 336-339.

Merriam, S. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Moe, C. L., & Rheingans, R. D. (2006). Global challenges in water, sanitation and health. *Journal of water and health*, *4* (51), 41-57.

Morrison, M. (2007). What do we mean by educational research. In R. J. Briggs and M. Coleman (eds.) *Research Methods in Educational Leadership and Management* (pp 13-36). Los Angeles: Sage Publications.

O'reilly, C. E., Freeman, M. C., Ravani, M., Migele, J., Mwaki, A., Ayalo, M., Ombeki, S., Hoekstra, R. M., & Quick, R. (2006). The impact of a school-based safe water and hygiene programme on knowledge and practices of students and their parents: Nyanza Province, western Kenya, 2006. *Epidemiology and Infection, 136*(1), 80-91.

Onyango-Ouma, W., Aagaard-Hansen, J., & Jensen, B. B. (2005). The potential of school children as health change agents in rural western Kenya. *Social Science & Medicine, 61*(8), 1711-1722.

Patton, Q. M. (2002). *Qualitative research & evaluation methods (3rd ed.)*. Thousand Oaks: Sage.

Patton, Q. M. (2015). *Qualitative research & evaluation methods (4th ed.)*. USA: Sage Publications Inc.

Rabie, T., & Curtis, V. (2006). Hand washing and risk of respiratory infections: a quantitative systematic review. *Tropical Medicine and International Health, 11*, 258-267.

Rugg, G., & Petre, M. (2007). *A gentle guide to research methods*. Maidenhead: Open University Press.

Scharp, K. M., & Thomas, L. J. (2019). Disrupting the humanities and social science binary: Framing communication studies as a transformative discipline. *Review of Communication*, *19*(2), 147–163.

Sikes, P. (2004). Methodology, procedures and ethical concerns. In C. Opei (Ed.). *Doing educational research: A guide to first time researchers* (pp. 15-33). London: Sage Publiccations.

The Kassena-Nankana West District Assembly. (2014). The Composite Budget of the Kassena/Nankana West District Assembly for the 2014 Fiscal Year. Retrieved from www.mofep.gov.gh

United Nations Development Programme. (2011). Human Development Report 2011. Retrieved from http://www.gh.undp.org/content/dam/Ghana/docs/Doc/IncIgro/UNDP_GH_INCGRO_DHDR2011_Wa-Municipal-Assembly

United Nations International Children's Emergency Fund. (2012). *Raising Even More Clean Hands*. UNICEF: New York, NY, USA.

United Nations International Children's Emergency Fund. (2015). Annual Report. Retrieved from https://www.unicef.org/media/50046/file/UNICEF_Annual_Report_2015_ENG.pdf

United Nations International Children's Emergency Fund. (2018). Water, Sanitation and Hygiene: UNICEF, 2018 works to ensure that every child thrives in a clean environment. Retrieved from *https://www.unicef.org/ghana/water-sanitation-and-hygiene*

United States Agency for International Development. (2018). GHANA WASH PROJECT: Success Story. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/

Valerie, A., Curtis, L., Danquah, O., & Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: An eleven country review. *Health Educ. Res. 24*, 655-673.

World Health Organization. (2005) Water, Sanitation and hygiene links to health. Retrieved from https://www.who.int/water_sanitation_health/publications/fact

World Health Organization. (2008). Water, Better Health: Costs, Benefits and Sustainability of Interventions to Protect and Promote Health. World Health Organization, Geneva, 2008.

World Vision. (2019). 40 years of Integrated Water, Sanitation and Hygiene Programming in Ghana. Retrieved from https://www.wvi.org/sites/default/files/2020-01/FINAL%20Wash_0.pdf

Yin, R. K. (2003). *Case study research (3rd ed.)* Sage publication: Inc California USA.

Yin, R. K. (2014). *Case study research: Design and methods (5th ed.)*. Thousand Oaks, CA: Sage.

Author Biography

Wasila Yakubu is an assistant lecturer at Methodist College of Education, Akyem Asene-Aboabo, Oda in the Eastern Region of Ghana.

Sethina2016@yahoo.com

Sethina Annang Danqua is a senior assistant registrar at the Institute of Local Government Studies in the Greater Accra Region of Ghana.

Sethina2016@yahoo.com