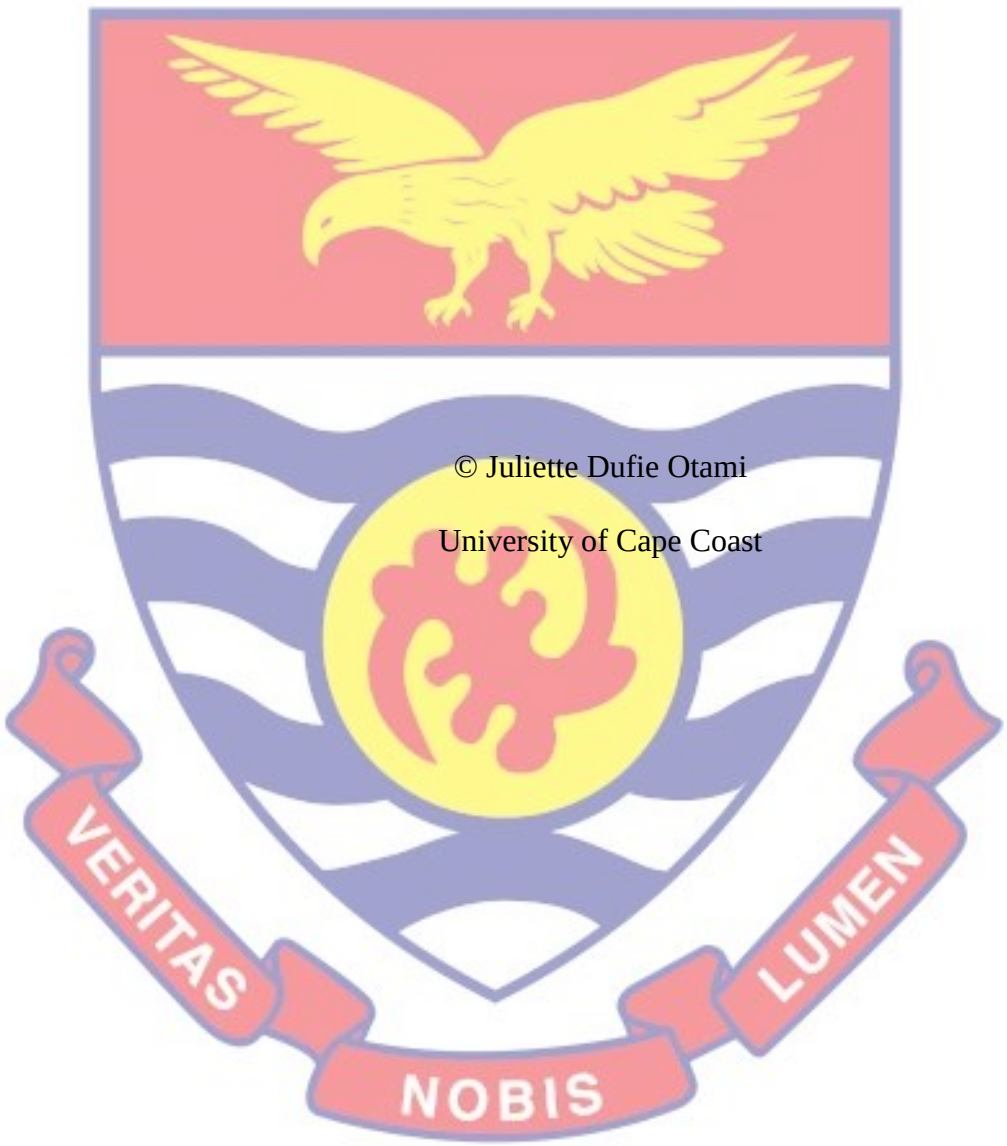
UNIVERSITY OF CAPE COAST

SCHOOL CHILDREN AS AGENTS OF WATER SUPPLY, SANITATION AND HYGIENE BEHAVIOUR CHANGE PRACTICES IN THE ASIKUMA-ODOBEN-BRAKWA DISTRICT OF GHANA

JULIETTE DUFIE OTAMI

2022



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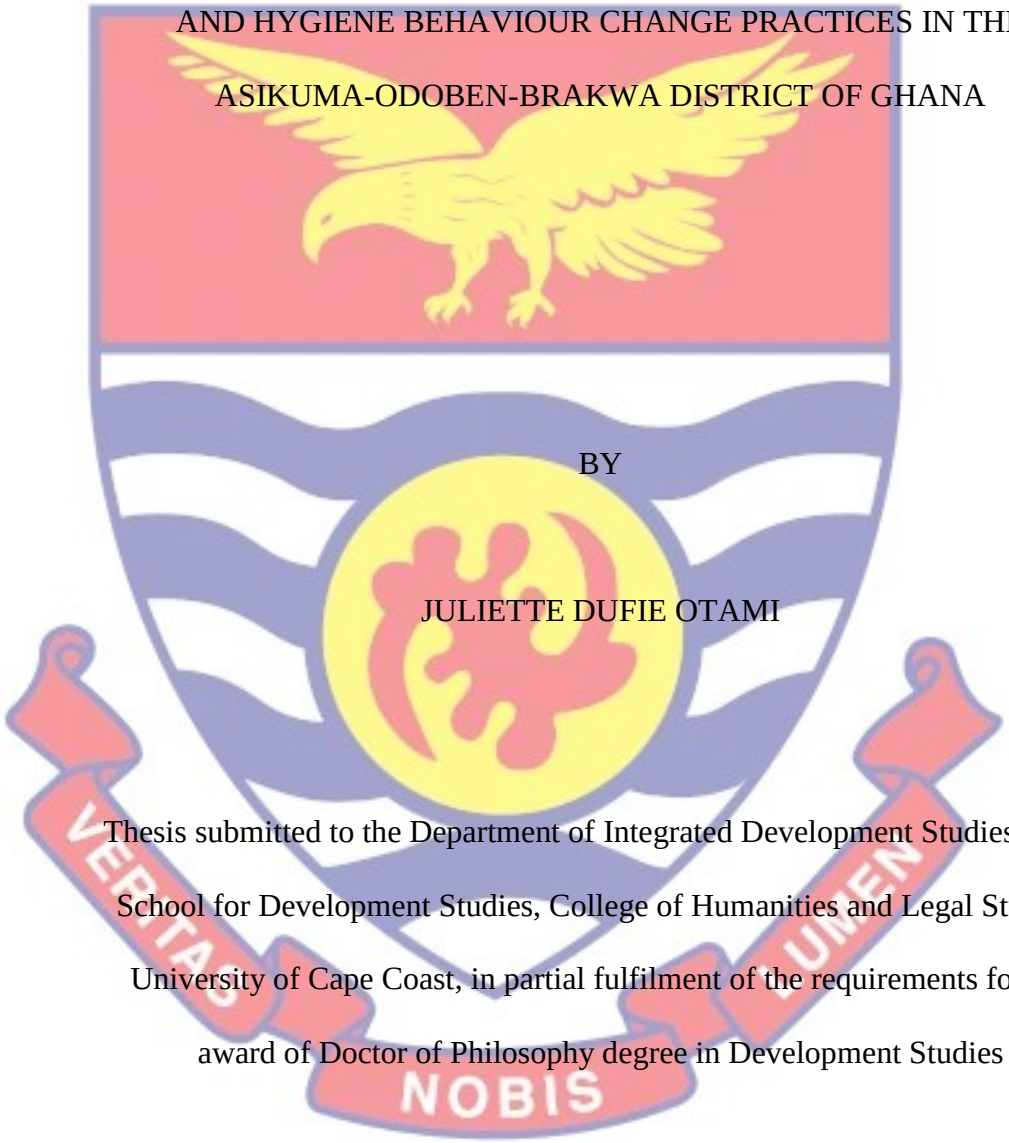

BY

JULIETTE DUFIE OTAMI

Thesis submitted to the Department of Integrated Development Studies of the School for Development Studies, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Doctor of Philosophy degree in Development Studies

MAY 2022

DECLARATION

Candidate's Declaration

I hereby declare that this thesis 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.

Candidate's Signature……. Date ……...……

Name: Juliette Dufie Otami

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature…….…….. Date ……...…..……

Name: Prof. Stephen Bugu Kendie

Co-Supervisor's Signature……. Date …...…….

Name: Dr. Joseph Boateng Agyenim

ABSTRACT

Elimination of water related diseases requires behaviour change regarding water supply, sanitation and hygiene (WASH) practices. These behaviours are transferrable to generations though are difficult to change. However, it is reported that children are most appropriate medium through which WASH behaviours could be changed. This study, therefore, explored how school children could serve as agents of WASH behaviour change practices in the Asikuma-Odoben-Brakwa District. Using Convergent Parallel Mixed Method Research Design, a multi-stage sampling technique was employed to select 552 pupils and 56 teachers from WASH and Non-WASH schools, 8 School-based Health Coordinators, and 272 household heads to obtain quantitative and qualitative data with Interview Schedule, Observation Checklist and Focus Group Discussions. The results revealed that pupils in WASH compared with non-WASH schools had the potential to serve as agents of WASH behaviour change because their WASH behaviours; were guided by action plans, exhibited better knowledge and practice, and were confident of their abilities to influence WASH behaviours of their households. Teachers in both school-types received no formal training on WASH. Household heads trusted information they received from pupils. Inadequate WASH facilities in homes and attitudes of families towards pupils were barriers to communication of WASH information. It was recommended among others that Ghana Education Service and other stakeholders in WASH activities collaborate to ensure schools and the communities are provided with WASH facilities to enhance acquisition of proper WASH behaviours in other to teach their households.

KEY WORDS

Agents of change

Behaviour change

School children/pupils

Water, Sanitation, and hygiene behaviours

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DEDICATION

To my Mum, my sister and my daughter, Grace Botah, Mrs. Johanna Tabiaa Effah and my daughter Eyram Maame Adwoa Sarpong Otami.

TABLE OF CONTENTS

CHAPTER FOUR: EXAMINATION OF WASH ACTIVITIES IN SCHOOLS

LIST OF TABLES

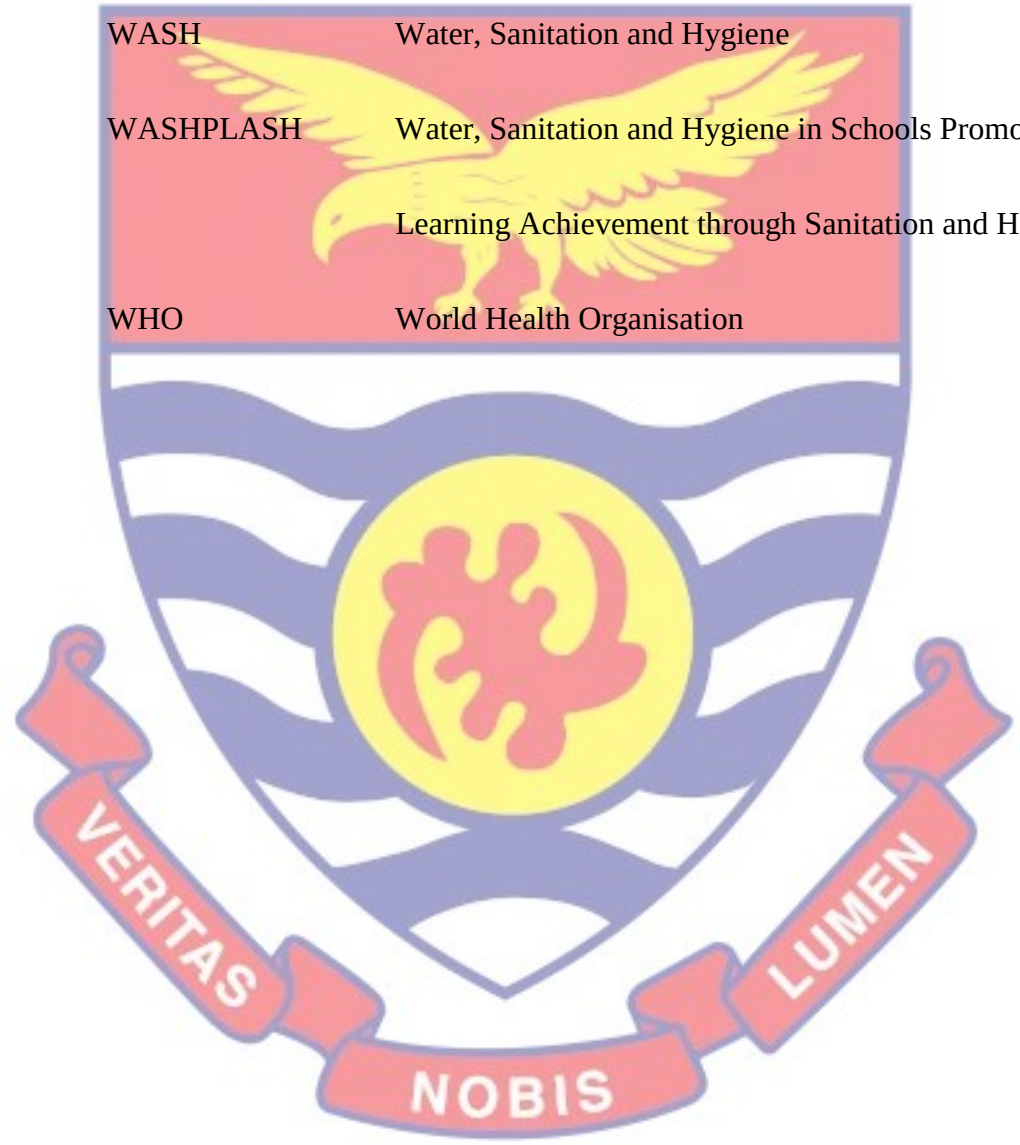
LIST OF FIGURES

LIST OF ABBREVIATIONS

AOB	Asikuma-Odoben-Brakwa
BCC	Behaviour Change Communication Model
CRC	Convention on the Rights of the Child
CWSA	Community Water and Sanitation Agency
EFA	Education for All
EHSD	Environmental Health and Sanitation Directorate
ESARR	Educational Sector Review Report
FMP	Facility Management Plan
GES	Ghana Education Service
GHS	Ghana Health Service
GoG	Government of Ghana
GSS	Ghana Statistical Service
G-SHEP	Ghana School Health Education Programme
GTEC	Ghana Tertiary Education Council
HSC	Health of School Children
IEC	Information Education and Communication
IGF	Internally Generated Fund
IOMEH	Institute of Occupational Medicine and Environmental Health

IRC	International Resource Centre
JMP	Joint Monitoring Programme
MLGRD	Ministry of Local Government and Rural Development
MoE	Ministry of Education
MoH	Ministry of Health
MWRWH	Ministry of Water Resources, Works and Housing
NaCCA	National Council for Curriculum and Assessment
PTA	Parents Teachers Association
RCN	Resource Centre Network
SDG	Sustainable Development Goal
SDSN	Sustainable Development Solutions Network
SbHC	School-based Health Co-ordinator
SHC	School Health Club
SHEP	School Health Education Programme
SMC	School Management Committee
UNCRC	United Nations Convention on the Rights of the Child
UNCWSP	National Community Water and Sanitation Programme
UNFPA	United Nations Population Funds
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational Scientific and Cultural

	Organization
UN-WDPAC	United Nations-Water Decade Programme on Advocacy and Communication
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WASHPLASH	Water, Sanitation and Hygiene in Schools Promoting Learning Achievement through Sanitation and Hygiene
WHO	World Health Organisation



CHAPTER ONE

INTRODUCTION

Water supply, Sanitation and Hygiene (WASH) issues are critical to human existence. In spite of the key role WASH plays in human lives, we are confronted with its associated diseases. Elimination of WASH related diseases involves behaviour change with regard to Water supply, Sanitation and Hygiene (WASH) practices of communities. Practices such as open defecation and unsanitary disposal of faecal material of both human and animals are habits passed on to generations. Given the difficulty in changing such habits, it is hypothesised that children, especially those in school, could be the best medium of WASH behaviour change among the youth and their families. Consequently, many studies have been designed and carried out in many communities to achieve the change through teaching WASH behaviours such as proper water supply, sanitation and hygiene to school children with the anticipation that such children will serve as trainers and enforcers in their homes and among their peers. The School Health Education Programme (SHEP), which enjoys funding from United Nation Children's Fund (UNICEF) and other organisations was based on the assumption that improved health of school children will impact their enrolment and achievement. Thus, using the Agency Theory and the Behaviour Change Communication Model (BCC) as lens, this study explored how school children learn WASH behaviour practices through the SHEP components in the school curriculum and how they influence their peers and households.

Background to the Study

Globally, children are the most affected by poor water and sanitary conditions and practices resulting from the use of contaminated water supply, poor disposal of excreta and unhygienic practices in their communities. Since their immune system is not fully developed, millions of children, particularly those of school-going-age fall ill and die every day from water and sanitation related diseases such as diarrhoea, acute respiration infection and other faecal-oral diseases (Resource Centre Network, Ghana, (RCN) 2014). School children are at risk due to neglect of basic personal hygiene compared to adults (Postma, Getkate & Wijk-Sijbesma, 2004). For instance, it is estimated that out of the 2.5 million diarrhoeal cases reported every year worldwide, 88 percent are related to unsafe water, inadequate sanitation and poor hygiene, while 1.5 million people, mostly children die every year (Arthur, 2014; WaterAid, 2013).

The school environment has in most cases been implicated in the spread of gastrointestinal and faecal-oral diseases (Dube & January, 2012). Since most schools do not have adequate water supply, sanitation and hygiene (WASH) facilities, many school children especially in developing countries become vulnerable and suffer from increasing problem of diarrhoeal and communicable diseases as a result of poor hand washing practices and inadequate sanitary conditions. Poor health mostly affects school children's education by promoting absenteeism, affecting their learning abilities thereby making them dropout of school or performing poorly (Al Bashtawy, 2015; Lalloo, Olukoye & Olliaro, 2006; Ohlin, 2012). Therefore, access to safe WASH facilities in schools and practising of appropriate hygiene behaviour by

all users can help prevent most of these diseases which often deprive most children of their right to life and effective schooling (Assefa & Kumie, 2014; WASHCost, 2013).

Access to good water supply, sanitation and hygiene are fundamental to good health, and an effective way to human development (World Health Organisation (WHO)/United Nations Children's Fund, (UNICEF) 2014). Therefore, in this study WASH behaviour practices are conceptualised as the use of clean water supply, safe means of waste disposal and keeping oneself and surroundings clean. In this regard, maintaining good water supply, sanitation and hygiene behaviours become critical to the achievements of the Sustainable Development Goals (SDGs), especially those that enjoin nations to promote access to education, good health and development (WHO/UNICEF). The link between WASH and the SDGs is seen in the interconnectedness among the goals particularly Goal Six which seeks to ensure access to water and sanitation for all by 2030 (Sustainable Development Solutions Network (SDSN), 2014). Gupta (2015) observes that without attaining Goal Six, progress in the other goals relating to education (Goal 4), extreme poverty (Goal 1), health (Goal 3) and inequality (Goal 10) which largely depend on how well people have access to water supply, sanitation and hygiene would also not be met.

According to Pawson (2006) the effectiveness and sustainability of any programme depends on the facilities provided, the combined action of the behavioural mechanisms underlying it as well as the context in which it takes place. Van der Knaap, Nijssen and Bogaerts (2006) explain that since such behavioural mechanisms operate through values, beliefs and past experiences

of individuals in the social system, they often lead to behaviour change. Therefore, factors such as interpersonal networks and individual agency become pertinent to the success of such interventions.

In reference to context, Pawson (2006) further establishes that behaviour mechanisms of school children often occur either through the school or the home environment. However, Howard-Barr (2008) perceives the school context as more important than the home because that is where school children spend most of their active hours, (about 6-9 hours a day). Eshuchi (2013), in what appears to be in support of Howard-Barr, argues that since school sanitation and hygiene education makes safe WASH behaviour practices part of the school curriculum, the school becomes the strongest social and educational change institution that presents greater opportunities to children. The school, therefore, acts as a channel to behaviour change messages on children's socialisation into health-promoting norms and behaviour practices. Under such conditions, using school children as agents of WASH behaviour change practices contributes greatly to prevent them from most of the WASH related diseases (Eshuchi, 2013; WASHCost, 2013).

Bennell (2002) had argued that school children account for almost half of the population in developing countries, therefore, promoting good WASH practices such as hand washing with soap, is not only necessary but also very relevant. Bennell further postulates that, since such practices are likely to be taken into adulthood when properly adopted, school children should be encouraged to engage and actively participate in the promotion of good WASH behaviours in schools and in their communities. Such level of participation mostly creates a sense of ownership among the children and

makes them adopt and become promoters of new behaviour change practices (Arthur, 2014; UNICEF, 2008).

Pridmore (2007) points out that earlier attempts at ensuring WASH behaviour change practices among families and communities by project officers have mainly focused on using adults, especially women, without considering the role school children could play. Knafo and Galansky (2008) observe that when hygiene practices are established early in life, they are reinforced by parents and elders in the family. Thus, parents tend to teach their children by inculcating their knowledge, values and beliefs about WASH practices in them. Adams (2012) posits that such conventional style of communicating sanitation and hygiene education programmes often fail in convincing people to adopt and use safer WASH behaviour practices.

Drawing on an earlier study by Bolt and Caincross (2004) on the long-term effects of community hygiene education programmes for adults and children, Adams (2012) argues that sanitation and hygiene behaviours could only be sustained for 7-9 years beyond the end of an intervention. As a result, earlier WASH education programmes have narrowly tailored goals benefitting some sections of communities with little or no concerns for future generations. This is seen in the increasing effect of WASH related diseases especially among children. For instance, a UNICEF report indicates that over 60 percent of all reported cases in Ghana's medical delivery facilities are related to poor water supply, sanitation and hygiene situations, and 15,000 children in Ghana, mostly under the age of five die every year from diseases associated with poor WASH conditions (Arthur, 2014; Mooijman, Esseku & Tay, 2014). This

situation calls for the consideration of alternative methods of ensuring WASH behaviour change practices.

A growing body of literature fostering and maintaining a change in WASH behaviour practices at the individual, household, and community levels have provided evidence for a bi-directional influence between parents and children. These studies have advocated the potential of children, particularly school children, as agents of WASH behaviour change practices (Bresee Lupele, Caruso, Fry & Freeman 2014; Knafo & Galansky, 2008; Muzaki, 2011; Mwanga, Jensen, Magnussen & Aagaard-Hansen, 2008; Olayiwole, Ezirim, Glory & Okoro, 2003; Onyango-Ouma, Aagaard-Hansen & Jensen, 2005). It is argued in these studies that using children as agents for dissemination of WASH behaviour change messages is essential and effective because children are fast learners, curious and have regular access to information through schools. For instance, the separate studies of Onyango-Ouma, Aagaard-Hansen and Jensen; and Muzaki reveal that, children are often seen by parents as trusted sources of information who can demonstrate and advocate for healthy behaviours and could be regular reminders for habit-formation. Bresee et al on the other hand reveal that when children acquire health related knowledge, values, skills and practices at school, they become empowered to pursue healthy life for themselves, families, peers and their communities.

The study is situated in both the Agency theory by Alchian and Demsetz (1972) and Jensen and Meckling (1976) and the Behaviour Change Communication (BCC) model. These are discussed in detail in Chapter 2. The Agency theory is an economic theory which has found its routes in different

disciplines. It is viewed as a contract between a person, (principal) who appoints another person, (an agent) to perform a service in accordance with the interests of the principal. This includes delegating some decision-making authority by providing knowledge, resources and skills to the agent in order to motivate him or her to perform the assigned task effectively and efficiently. The agency theory is relevant to this study because it acknowledges that children could act as agents of WASH behaviour change, when they (agents) are provided with WASH facilities; adequate knowledge and skills on WASH information; and are ready to put them into practice. In the light of this, teachers (principals) must ensure that children (agents) acquire the requisite knowledge, resources and skills on WASH needed to function effectively within the laid down rules and regulations. The acquisition of knowledge, skills and resources would empower children to be confident to practice and communicate effectively with their families what they have learnt.

The BCC model has its roots in behaviour change theories where proponents employ combination of theories and practical steps based on field realities rather than relying on any single theory (Milgrom, 2015). The model suggests that, in behaviour change processes, an individual or the target community goes through series of iterative steps from being unaware to being motivated to change through some enabling and reinforcing factors as well as varied communication channels (Woods, 2006). During these processes, the individual's attitude, level of concern and knowledge toward a behaviour, are very critical for him or her to be motivated to change and practice the new behaviour. These iterative processes mainly take place in the school. Therefore, school children could be perceived as individuals who could move

from the stage of being unaware to being motivated to change and become active agents of WASH behaviour change in their communities. This model is relevant to the study since it brings out factors and the relevant communication channels that are critical for school children to be agents of change.

The role of school children as agents of WASH behaviour change practices has been recognised in the global circles. In 1907, an international conference on the Health of School Children (HSC) was held in London (St. Leger, 2006). This conference resulted in the promotion of primary health care and subsequently the "Health for All" (HFA) programme which was aimed at securing the health and well-being of people by the year 2000. Member states unanimously agreed that since medical care alone could not guarantee good health, a holistic approach to health care that should involve other sectors such as agriculture, industry, education, housing and communication was needed.

A number of conferences were later held to improve the health of school children through specific health intervention programmes at school (St Leger, 2006). One of such conferences was the 1990 World Conference on "Education for All" (EFA) in Jomtien, Thailand. The EFA movement which aimed at providing quality basic education for all children also introduced health promotion through schools. Realising the importance of school health education, member states at the end of the EFA conference issued a declaration by endorsing a-five-theme "expanded vision for basic education" programme (Ghana Education Service, [GES], 2010 p 10).

In that same year, the United Nations General Assembly unanimously adopted the Convention on the Rights of the Child (CRC) which explicitly addressed children's participation in projects (Giertsen, 2001). Member states

recognised that, “children are not possessions, but people who have human rights” thus, parents and families have the responsibility to provide “the best environment for children to grow” (UNICEF, 2006, p 2; United Nations Convention on the Rights of the Child, [UNCRC], 1989). Such rights are not only fundamental to life, but also, encompass physical, psychological, social and spiritual health of children (Montgomery-Andersen & Borup, 2012). Consequently, the UNCRC makes an important contribution to the recognition of children’s participation in projects by addressing it explicitly and giving it a framework.

In line with both the Jomtien declaration and the CRC to ensure good health for school children, the government of Ghana through the Community Water and Sanitation Agency (CWSA) and the Environmental Health and Sanitation Directorate (EHSD) of the Ministry of Local Government and Rural Development (MLGRD) directed the Ministry of Health (MoH) through the Ghana Health Service (GHS) and the Ministry of Education (MoE) through the Ghana Education Service (GES) to establish an integrated and a comprehensive School Health Education Programme (SHEP) for school-age children in 1992 (GES, 2010). School Health Education Programme is a way of establishing a relationship between education (the school) and health of school children by ensuring the availability and use of WASH facilities in schools to facilitate good WASH behaviour practices (SHEP, 2008; Williams & Leherr, 1998).

The concept of SHEP is based on the assumption that improved health status of school children impact their enrolment and achievements. Therefore, SHEP is structured to be delivered among four main areas. These are skills-

based health education; disease prevention and control; food safety and nutrition education; and safe and healthy school environment. Under safe and healthy school environment, SHEP aims to establish among other things proper personal hygiene habits such as hand washing with soap; inculcate in school children good sanitation and hygiene promotion habits, attitudes, and values; and to use school children as agents of behavioural change in their homes and communities Ministry of Water, Resources, Works and Housing [MWRWH], (2011). In this regard, SHEP serves as a means not only to reduce WASH-related diseases, but also, to create a well-informed health-conscious school population who have the potential to act as agents of change in their homes and communities. (GES, 2010).

To maximise the benefits of SHEP, the Government of Ghana in 1998 launched a National Community Water and Sanitation Programme (NCWSP) to ensure the provision of potable water and improved sanitation facilities in rural areas; and provide schools with latrines, urinals and handwashing facilities (GES, 2010). As part of ensuring effective delivery of sanitation and hygiene education at the school level through SHEP, the government also developed relevant teaching aids to schools on hygiene education (GES). To ensure the provision of good sanitation and hygiene education, SHEP seeks to: (a) develop relevant teaching aids for kindergarten and basic schools for hygiene education; (b) integrate hygiene education into the Basic and Senior High Schools Syllabuses; (c) execute several school hygiene competitions; and, (d) develop and distribute hygiene promotion Information Education and Communication (IEC) materials.

Since behaviour change can only be achieved when the provision of hardware is supported by software, SHEP goes beyond the construction of water and sanitation facilities in and around the school compound to improve the education, hygiene and sanitation practices of school children (GES, 2012). SHEP has been introduced in all basic schools in the country. The Central Region has been a beneficiary of most intervention programmes from SHEP. Among such are the Water, Sanitation, and Hygiene in Schools Promoting Learning Achievement through Sanitation Hygiene (WASHSPLASH) programme which was piloted in both Asikuma-Odoben-Brakwa District in the Central Region and Tolon Kumbungu District in the Northern Region of Ghana in 2011 (GES, 2012). The WASHSPLASH initiative laid emphasis on three hygiene behaviours viz: household water treatment, water transport and safe storage; hand washing with soap; and safe excreta disposal. Following the success of the pilot project, the WASHSPLASH initiative was rolled-out to 10 UNICEF supported districts in 2012 under the WASH in School programme (GES). Central Region has five UNICEF supported districts with both hard and software interventions.

Among the software interventions are training of school children in health and hygiene education through sports; training of health club members and training of WASH ambassadors to disseminate information on WASH within and outside school communities (Education Sector Annual Review [ESAR], 2013). In this regard, the role of the school in empowering children about their health needs such as the prevention of WASH related disease, adoption of good hygiene behaviour practices and spreading of knowledge of

WASH behaviour practices to their families and communities cannot be overlooked.

The primary school is considered as one level in the educational ladder which offers an exceptional opportunity to improve the lives of younger people towards health promotion in their families and communities (World Health Organisation [WHO], 1994). This is because children develop much of their behaviours during their initial school years by interacting freely with their peers and families without prejudices and fear, learning from other children and they are influenced by the behaviours of their peers (Leena & D'Souza, 2014).

Given that children spend a major part of their lives in the school, schools are perceived to offer a good platform to instil healthful living before harmful habits are established (Howard-Barr, 2008). Dube and January (2012) argue that children's knowledge, attitudes and beliefs on health education largely depend on the knowledge they acquire and the experiences they go through in school. Therefore, the role of the teacher as a role model who provides leadership in water, sanitation and hygiene related issues within the school context cannot be grossed over (Dube & January). Teachers educate children to adopt healthy hygiene habits from a younger age which helps to sustain their future children and grandchildren (Singh, 2013).

The primary school is considered as one level in education which offers an exceptional opportunity to improve the lives of younger people towards health promotion in their families and community. This is because almost all children at some point in time attend primary school. It is the period when children interact freely with peers and families without fear or prejudice

(Leena & D'Souza, 2014). Therefore, using primary school children for this study is appropriate.

Onyango-Ouma et al (2005) have suggested that peer-to-peer teaching, classroom sessions with focused training materials and role-playing or songs influence the teaching, learning and acquisition of knowledge in hygiene behaviour and practices. They further revealed that while teachers can successfully transfer knowledge to pupils, pupils can also share the information acquired to peers, families and communities to change behaviours at the school, household and community levels (O'reilly et al., 2008). Assefa and Kumie (2014) have pointed out the major role that water, sanitation and hygiene-enabling facilities play in the practicing of good hygiene behaviours that children learn from school. Referring to a study by Alello, Coulborn, Perez and Larson (2008) in Ghana, Assefa and Kumie pointed out that the lack of sanitation and hygiene-enabling facilities at school and at home did not allow children to practice the hygiene behaviour knowledge acquired at school.

Although health education has been practised and introduced in the school curricula, the focus has mainly been on disease prevention and control (St Leger, 2006). The methodology for school health delivery as St Leger observed had been mainly didactic, that is, providing information on specific topics (St Leger; Werner & Bower, 1992) instead of creating a critical consciousness and helping learners to acquire problem solving skills to lead a healthy lifestyle (Hubley, 1993; Van Wijk & Murre, 2003) and influence that of their families. Thus, a strategy of bringing children to the forefront in

school WASH initiatives which will help empower them and enhance their sense of responsibility is in the right direction.

In Ghana, the strategy of bringing children to the forefront in school WASH initiatives has been raised in response to the growing recognition of the link between health and education as a fundamental right of every child. Based on the assumption that the child is young, inexperienced, knows little or nothing about the society he or she finds him/herself, adults believe that the child must always be guided into understanding issues as they are or appear in their right perspectives until he or she matures into adulthood (Anamuah-Mensah, 2004). Therefore, a focus on school children as agents of WASH behaviour change is stemmed from the fact that children have a right to basic facilities such as school toilets, safe drinking water, clean surroundings and hand washing facilities. If these conditions are created, children come to school, enjoy learning, learn better and take back to their families, especially siblings and peers, concepts and practices on good sanitation and hygiene behaviours.

Statement of the Problem

It is often argued that schools are the strongest social and educational institutions which have profound influence on children, their families and communities. The assumption is that since children acquire knowledge from school, they can transfer this knowledge into practice (Aduku, 2014). Studies have indicated that school-based health education interventions often engage children to reach other children and adults with health messages and hygiene practices learned at school (Ayi et al., 2010; Mwanga, Jensen et al, 2008). In this regard, school children are able to acquire health related knowledge,

values, skills, and practices which make them take critical decisions about their own lives and pursue a healthy life for their family members (Muzaki, 2011).

The Government of Ghana (GoG) realising the importance of health education introduced the School Health Education Programme (SHEP) in 1992 to integrate health education and other health delivery services in the school curriculum. The aim of SHEP is to expose children to information on improving their health and sharing such information with their families, friends and community members. However, Aduku (n.d.) observes that high expectations of health and sanitation education given to pupils to position them as agents of change in WASH behaviour practices has not been effective because many schools suffer from (a) non-existent, insufficient or unsafe water supply, sanitation and hygiene facilities, (b) unhealthy and dirty classrooms and school compounds, and, (c) poor hand washing habits and practices among school children.

Studies that have explored the use of school children as agents in WASH behaviour change in countries like Mali, Kenya, Rwanda, and Tanzania respectively (Bresee et al., 2014; Eshuchi, 2013; Garn, Trinies, Toubkiss and Freeman 2017; McMichael, 2019; Muzaki, 2011; Mwanga et al., 2008; Onyango-Ouma et al., 2005) have identified: (a) health education in schools mainly comprise few lessons on hygiene, sanitation and nutrition within the science curriculum which disseminate information to the individual child but make no attempt to respond to the need to find collective solutions to health problems and concerns; (b) few school-based WASH programmes use systematic or evidence-based approaches to promote the dissemination of

knowledge and practice; (c) few teachers had adequate mastery of content or pedagogy to be effective conveyors of health education; (d) there is limited research on the mechanisms by which children can influence their parents and siblings in their role as agents of hygiene behaviour change; and, (e) previous attempts to promote hand washing through modern communication channels have shown minimal success.

In Ghana, Appiah-Brempong, Harris, Newton, and Gulis (2018) and Fianko and Gawu (2019) pointed out that though hygiene and sanitation messages are included in the formal curriculum, the extent of actual health education taught in classes appears to depend largely on the motivation of individual teachers. They asserted that the responsibility of SHEP to ensure good health of school children to serve as agents of health delivery messages in their communities is not clearly communicated throughout the education and health systems. A situation which results in a substantial gap and overlap in health delivery which create difficulty for children to acquire the right health message and serve as agents of change (Appiah-Brempong et al.).

Pridmore (2007) argued that in spite of the fact that school hygiene programmes have long existed in Ghana, their acceptability as an effective and efficient strategy for improving health and equipping children with relevant skills to serve as agents of change still remain contentious. He further noted that school health education has traditionally been accorded a low status in the school curricula. Steiner-Asiedu et al. (2011) observed that health education in Ghanaian basic schools has often been taught as an unexaminable part of Environmental Studies, Natural Science, and Religious and Moral Education curricula. This may result in school children not paying much attention to

health education information taught them. Such attitude, as noted by Steiner-Asiedu et al. may defeat the goal of using children to disseminate hygiene and sanitation messages.

Snel and Caincross (2003), however, questioned the relevance and effectiveness of hygiene education in primary schools. They observe that, though school health is basically about the health of school children, the roles school children play are often not indicated in the Guidelines for School Health Programmes (GSHP). This view has equally been expressed by Ampeh (2008) in her evaluative study on SHEP for the period 2001-2006 in Ghana.

Olayiwole et al. (2003) have pointed out the effect of context and culture on children's agency. They noted that most African cultures do not allow children to correct adults, thus, children find it difficult to correct parents at home even after having learnt the correct hygiene habits in school. Anamuah-Mensah (2004) reveals a similar situation in the Ghanaian culture where adults find it difficult to refrain from imposing what they think is critical information to children. He observed a similar situation in the school setting where it is assumed that the socialisation process is supposed to be more formal and well-coordinated with teachers acting as role models. According to him, the relationship between the teacher (adult) and the pupil (child) is often a superior and subordinate relationship. This means that, the teacher becomes "the authoritative knowledge-giver and the child, the subservient indifferent receiver of knowledge who should be ever ready to take instructions any how" (Anamuah-Mensah, 2004, p4). Thus, the Ghanaian culture only places children as recipients of adults' decisions and not involved

in any form of decision-making process where they could express their opinions and be accepted by adults (UNICEF, 2011).

In spite of all the activities to ensure the goals of SHEP are met, much is unknown about the activities in the Ghanaian basic schools that could influence the means by which school children could communicate health messages to others, especially, in areas where children's roles are predetermined and moulded by adults in the Ghanaian culture. Even the few studies undertaken are skewed towards how children could be used as health messengers for the control of particular WASH diseases and practices, such as malaria and hand washing without much reference to WASH as a whole (Ayi et al., 2010; Steiner-Asiedu et al., 2011).

Asikuma-Odoben-Brakwa District, one of the three districts which benefited and continues to benefit from SHEP and WASH interventions in schools since its inception in 1992, continues to grapple with WASH related problems such as low coverage of good water supply, indiscriminate disposal of waste into water bodies, streets and open defecation. This could be the cause of the high prevalence of WASH related diseases such as diarrhoea, bilharzias and cholera in the district (Ghana Statistical Service [GSS] District Profile Report, 2014). One therefore wonders whether SHEP in schools in the district has influenced school children to be trainers and enforcers of WASH behaviour change practices in the communities.

This study, therefore, attempts to fill the gap in literature using the Agency theory and the Behaviour Change Communication model to explore the extent to which the School Health Education Programme (SHEP) could prepare school children for a healthy living which can put them at the centre as

WASH behaviour advocates in their families and communities now and in future in the Asikuma-Odoben-Brakwa district.

Objectives of the Study

The overarching purpose of this study was to explore the use of school children as agents of WASH behaviour change practices in the Asikuma-Odoben-Brakwa District. The study specifically sought to;

1. examine the various facets of WASH behaviour activities in the primary school curriculum,
2. examine the role teachers' play in influencing school children's WASH behaviour change practices,
3. assess school children's knowledge and practices on WASH behaviours at school and at home,
4. assess how school children communicate WASH information learned from school to parents and peers,
5. examine the challenges children face in their role as agents of change.

Research Questions

The following questions guided the research:

1. What are the WASH behaviour change activities indicated in the primary school curriculum?
2. In what ways do teachers influence school children's WASH behaviour change practices?
3. What do school children know and practice about WASH behaviours in school and at home?
4. How do school children communicate WASH information learned from school to parents and peers?

5. What challenges do children face in their role as agents of change?

Significance of the Study

The study has significance for policy formulation and implementation in Ghana with respect to using school children as agents in WASH behaviour change practices. First, this study illuminates how WASH topics suggested in the Primary school curriculum are taught and the various extra curriculum activities employed by schools to ensure a change in WASH behaviour practices of school children. This provides information on how future curricular development and reviews on health education may serve the needs of schools and their communities.

Second, the study brings to the fore the training teachers receive on WASH issues in the district and the role they play in influencing the WASH behaviour practices of their pupils, families, and community members. This provides information on the calibre of teachers teaching WASH to children in schools to the Ministry of Education, Ghana Tertiary Education Council (GTEC), National Council for Curriculum and Assessment (NaCCA) and GES so as to offer pre service and in service training programmes for them.

Third, this study is significant for policy formulation in Ghana regarding challenges school children face in their role as agents of WASH behaviour change practices. This may help formulate new strategies to remedy the challenges by offering practical ways to project planners to incorporate children's knowledge and role as health education and promotion advocates.

Fourth, the combination of the Agency theory and the Behaviour Change Communication model in a single study have not only contributed to the existing debate on how effective school children could serve as agents of

change in WASH behaviour practices, but also, has shone more light on knowledge, understanding and application of operations of the theories in WASH behaviour practices.

Finally, information from this study has provided the basis for researchers in similar fields to conduct further research into related problems, expand knowledge and isolate issues for further investigations.

Scope of the Study

Though activities of SHEP are concentrated at the basic level which comprise children from Primary 1 to Junior High School, this study chose to use pupils in Primary 5 and 6 in the Asikuma-Odoben-Brakwa District of the Central Region of Ghana. This is because pupils in these classes are found to be very interactive with others and are able to share ideas with older people freely. Hence, were suitable to be used for this study. Also, only household heads whose children were in class 6 in the schools selected were used for the study. Furthermore, the study was looked at how school children could serve as agents of WASH behaviour change in school and at home but did not look at the change in WASH behaviours in the households and communities of children.

Limitations to the Study

In spite of the obvious advantages of integrating quantitative and qualitative data by the use of different methodologies, the two methodologies (quantitative and qualitative) are based on different assumptions. Some of the findings of the survey and FGDs at times seem conflicting. This is to be expected since situations in all schools may not fall in line with generalisations from the survey.

Another limitation was the restriction imposed on the data because of the decision to focus on with WASH and non-WASH schools one district for comparison. The two school types were selected from different circuits to avoid interaction for a perfect comparison. However, it is possible that there could be some level interaction among respondents given that they are all in one district, the interactions will not be so wide as to undermine the validity of the study. Finally, the selection of eight schools out of a total of 104 public basic schools places a limitation on the study. This was due to limited financial resources, and time at the researcher's disposal. However, since each school type shares similar characteristics with their counterparts, to a large extent the findings in this study are a fair representation of the situation.

Organisation of the Study

The thesis has additional seven chapters organised to offer understanding into concerns raised in this section. Chapter 2 was dedicated to the review of related literature on issues relating to the Agency theory and the BCC model and how they offer understanding into using school children as agents of WASH behaviour change practises. This chapter further, presents a conceptual framework that underpinned the study was constructed based on the theories. Chapter 3 presented research methodology employed in this study. It discussed the research design, the rational for the design as well as its strengths and weaknesses. Also, the study area, participants, and how they were selected were presented in this chapter. Again, a description of the structure of the instruments used for data collection and how data obtained were analysed to gain insight into how school children could serve as agents of change in WASH behaviours were presented.

In chapter 4 the results obtained from the analysis of how school children could serve as agents of change in relation to the evaluation of WASH activities in the Primary School Curriculum were presented and discussed. Whereas chapter 5 presented and discussed the role teachers play in influencing school children's WASH behaviours. Chapter 6 presented results and discussed it in relation to the knowledge and practices on WASH behaviours among pupils and their households. In chapter 7 information on how pupils communicate WASH behaviours to households as well as the challenges they faced in communicating WASH information were presented and discussed. Chapter eight presented an overview of the study and the methodology used. A summary of the key findings and their interpretations with reference to literature are also given. Implications and conclusions relating to the findings are also discussed in this chapter. In addition, areas for possible future research were suggested in this chapter.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews theories, models and concepts related to the study. It specifically looks at how the Agency theory and the Behaviour Change Communication Model could be used to explain the role school children could play in disseminating information on water supply, sanitation, and hygiene behaviours to ensure a change in behaviour practices for their peers, families and communities.

Agency Theory

Between the late 1960s and early 1970s economists explored the risk of sharing problems that emanated from individuals or groups as a result of the different attitudes toward risks by co-operating parties. By this, they developed the agency theory as the branch of financial economics and rational choice theory that looks at conflicts between people with different interests in the same assets, social structures and social relations at both macro and micro levels (Kiser, 1999).

Agency refers to as the actions of individuals and the effects of those actions. Giddens (1991) observed that agency is when an individual is able to observe his/her own experiences and is able to give reasons for his/her actions. Such actions often depend on the capability of those individuals to make a difference to a pre-existing state of affairs in the society. Since actors know what they do and can give a rational account of what they are doing, Craib (1992) perceives actors as conscious of these things and could routinely rationalise what they do in order to have self-security. Turker (1998) identified

agency in terms of reasoning and knowledge. Turker revealed that reasoning consists of the ability to formulate strategic choices to control resources and decisions that affect important life outcomes. Knowledge is when resources become the structured properties of social systems taken and improved by knowledgeable individuals in the society during their course of interactions. Therefore, resources are perceived as the medium through which agency is exercised and both make up people's capabilities.

Bandura (2001, p 2) seems to have offered a new dimension when he defines agency as the embodiment of "endowments, belief systems, self-regulatory capabilities and distributed structures and functions through which personal influence is exercised". Agency therefore relates to empowerment, which hinges on the empowerment theoretical framework, and participation.

The empowerment theory is seen as an interdependent process at the individual (psychological), organisational, and community levels which aims at how individuals (and groups) obtain and utilise resources to assert control and change their environmental circumstances (Zimmerman, 2000). Empowerment in this regard is the process by which those who have been denied the ability to make choices acquire such an ability to make decisions, motivate and do things that challenge power relations (Adams & Sydie, 2001). According to Koning, Frankiewicz, and Arnold (2018), agents are empowered when they are given a foundation of knowledge through training and skills and have access to the required information and facilities. By this the authors explain that agents must know and understand the aim and purpose of the programme; be confident in what they do; be trusted; have the required information; and have access to facilities. This would serve as a motivation for

them to practice the required behaviour. In effect having an agency means possessing the capacity to act independently and giving opportunity for subjects to make their own free choices and use of their capacities (Barker, 2005; Liebel, 2014; Kabeer, 2005). Thus, the empowerment theory relates to this study by exploring how schools provide children with appropriate WASH information and facilities in order to influence their households and communities in WASH behaviours.

Jensen and Meckling (1976) views agency theory as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (p 308). An agent in this regard is perceived as an individual who is able to act or use a range of casual (daily life) or influential powers that may already be used or deployed by others to influence the outside world or resist from such interventions (Giddens, 1984). From Giddens' explanation an agent does not exist when he or she loses the capability or power to make a difference, as such actions by the individual depend on his or her capabilities. Therefore, Bandura's (2001, p 2) definition of an agent as somebody who "intentionally makes things happen by one's actions" is adopted for this study. This definition of an agent depicts that the effect of what one does intentionally or unintentionally can be explained as the event which could not have happened if the individual had behaved differently.

Agency theory explains the relationships between principals and their agents, the power that is delegated to agents (Kisser, 1999), as well as how principals regulate or control the power given to their agents (Lan &

Heracleous, 2010). Figure 3 depicts the basic idea of the agency theory. It explains the relationship between a principal and an agent in which the principal delegates an agent to perform a task.

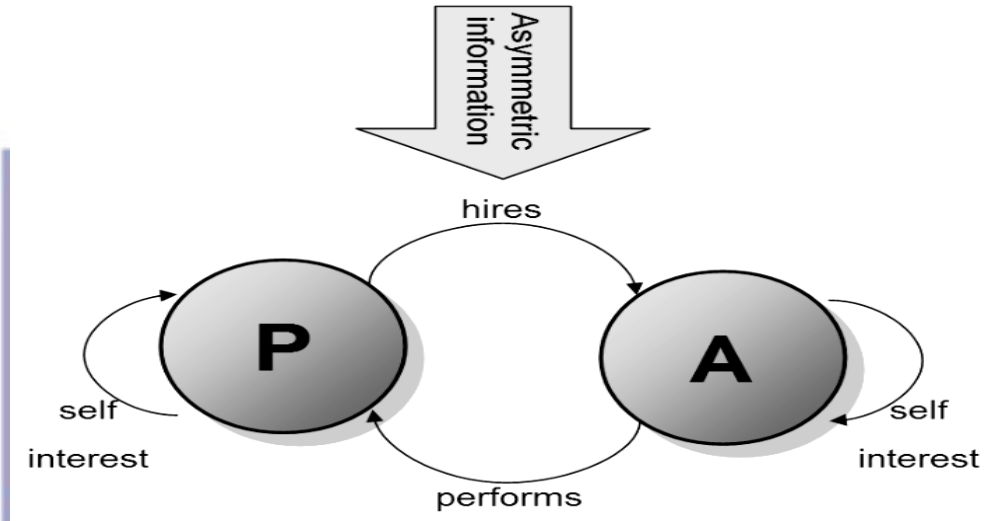


Figure 1: Basic idea of Agency Theory
P: Principal; A: Agent
Source: Lan & Heracleous, 2010

Agency theory has broadened its scope to include the agency problem that occurs when co-operating parties have different goals and division of labour (Milgrom & Roberts, 1992). Due to their position as a "communication link" between the "resource system" and the client, change agents are "socially marginalised" and often overloaded with information (Adelman & Taylor, 2011 p 4). The agency problem can be prevented by; (a) aligning the goals of the principal, and, (b) agent so that they are not in conflict (agency problem), and reconciling different tolerances of risk for the principal and agent.

Two primary characteristics identified by Mas-Colell, Whinston and Green (1995) as the cause of the agency problem are; (a) conflicts of interest which is caused by differing risk preferences where managers are risk aversed, and, (b)

shareholders risk-neutral and informational asymmetry (information failure) between the parties.

Asymmetry of information does not allow both parties to be sure whether each party is carrying out the duties that they should according to the contract (Shapiro, 2005). This problem arises when both parties have incomplete information about the actual goal, motivation and performance which potentially creates moral hazard and adverse selection. Moral hazard is essential to the agency theory because it is the exact problem that the agency theory is designed to address through various mechanisms such as incentives and monitoring (Eisenhardt, 1989; Smith, 2011). Moral hazard refers to hidden action or opportunistic behaviour, conflict of interest and the actual actions taken by the agent once the contract has been entered (Hendrikse, 2003; Smith, 2011). Hidden action refers specifically to the information asymmetry in a contractual relationship whereas opportunistic behaviour is inclination to human nature (Jensen, 1994; Smith, 2011). Adverse selection refers to a situation where one party has more accurate and different information than the other. In this regard, the party with less information is at a disadvantage to play within more information.

Stassart and de Visscher (2005) concede that the supervisory authority of the principal, by reason of efficiency, delegates part of its mission to specialised implementing parties (the agents) to perform (Stassart and de VisschPer as cited in Legrain & Auwers, 2006). Such relationship is mainly governed by the means of contract, either formal or informal, and may simply constitute implicit terms about how the principal expects the agent to behave (Deegan, 2009) in order to avoid the agency problem.

Clients can, however, receive the relevant information from change agents when the latter fully understand the needs of the former. Rogers (2005) and Adelman and Taylor (2011) indicate that effective change agents perform seven sequential roles. These are: (a) to develop a need for change on the part of clients; (b) to establish an information-exchange relationship; (c) to diagnose problems, and assess the extent to which an innovation is compatible with clients' needs; (d) to create an intent to change in the client, change agent's empathy with clients; (e) to translate intentions into actions; (f) to stabilise adoption and prevent discontinuance; and, (g) to achieve a terminal relationship with clients in order to ensure change in agent's credibility.

The late 1970's through to the 1980's, witnessed the development of the modern agency theory by Bourdieu (1979) and Giddens (1984). The modern agency theory evolved because they observed that, traditional agency theory "masquerades in terms of economic rationality, and presents itself as universal, possessing objective, tight and unassailable logic, rather than being a contingent product of specific socio-historical moment" (Shapiro, 2005 p 264). Bourdieu took the tenets of the agency theory further by distinguishing between doxa and agency. Bourdieu defines doxa as a behaviour adopted through repetition and conserved through its material expression. It is behaviour so thoroughly routinised such that, it becomes a habit. Agency on the other hand is perceived as the ability of the individual to comprehend the limits of doxa and their will to break out of these limits. In this context, agency theory becomes meaningless without the background of doxa. Therefore, a change in doxa through time is considered a product of agency (Bourdieu, 1995).

In reference to his "theory of structuration", Giddens indicates the duality of agency in his "duality of structure" and posited that agency is both structured, reproduces and revitalises the structure which happens through time (Giddens, 2002). An agency provides an engine through unintended consequences of action for technological change and takes higher level social structure and individual action into account without determinism or a return to individualist ideas (Giddens).

Sakhri (2015) further equates modern agency theory to the theory of Marxism which views conflict between classes (or groups of individuals) as the key behind social change. In explaining the idea of conflict, Sakhri explains agency theory provides a means of describing how individuals and groups gain or lose social power within a given structure. In this regard, agency can be perceived as individuals possessing the ability to exercise their own free will and make their own choices within their social structures. Social structures are viewed as products of individual actions that are sustained or discarded, rather than as incommensurable forces. Since the theory acknowledges the importance of an individual's action and responds to the perceived rules of daily life within a given structure, the agency theory has a place in theories which allow for individual experimentation, decision-making and choice (Islam, 2014; Sakhri).

The theory has been criticised on the basis that its viewpoint is a "peculiar way of understanding social reality" (Shapiro, 2005 p.2). This is because the theory wholeheartedly disregards social life and views social dynamic in a highly conservative top-down approach (Donaldson, 1990; Shapiro). This may lead to an oversimplified way of characterising and

solving problems in the organisational setting that may be potentially dangerous (Hartman, 2008; Surendra, 2010).

Another major criticism of the agency theory is that it fails to acknowledge the social context in which principal-agency relations occur. Critics argue that social constraints outside the principal–agent contract may limit agent opportunism or influence mechanisms used in controlling agent behaviour (Fligstein & Freeland, 1995; Lubatkin et al, 2005).

Amidst these critiques, Doney, Cannon and Mullen (1998) proposed a more socialised agency theory which links cultural dimensions such as power, distance, individualism/collectivism, and risk orientation to the development of interpersonal trust. Doney et al. explained that improving the understanding of how principal–agency relations are embedded in a particular social context should enhance the explanatory power of the agency theory outside of the traditional contexts in which it has been applied. The authors further observed that, accepting the sociologist's view that economic behaviour is shaped by social mechanisms, not just at the margin, but at the core is a way of creating a social agency theory. Such social mechanisms influence the conventions defining the various roles individuals inhabit (including that of agent and principal), as well as how they interact with one another (Aguilera & Jackson, 2010).

The social agency theory further focuses on the ways principals select certain types of agents (human agents) for monitoring their actions, and by using various amounts and types of positive and negative sanctions in other to control them (Shapiro, 2005). Human agency is the reflexive monitoring of actors' own behaviour as well as others. Monitoring of behaviours is

influenced by discursive and practical consciousness (Garrison, 2014; Giddens, 2002). Discursive consciousness denotes the capacity of the agents to "give reasons" and rationalise their conducts while practical consciousness connotes agents' "stock of unarticulated knowledge indirectly used to orient themselves to situations and to interpret the acts of others" (Giddens, p 238). How these concepts and relationships are understood and analysed (agency theory rather than the agency problem) is not universal. Heracleous and Lan (2012) believed that understanding the agency theory rather than the agency problem cannot address fundamental problems, unless there is a critical re-examination of this theory and the development of alternative conceptualisations.

Wiseman, Cuevas-Rodriguez and Gomez-Mejia (2012), thus, proposed an incremental extension intended to make agency theory institutionally sensitive and applicable without questioning its basic structure (Wiseman et al., 2012) which this study adapts. According to them, in distinguishing between agency problem and agency theory, they explained that, as long as delegation is involved, the agency problems (information asymmetry, conflict of interests, and opportunistic agent behaviour) were universal, even though a clear manifestation of these problems and ways to deal with them vary in social context. Since the agency theory is independent of any institutional context, it is possible to incorporate an institutional perspective into the agency theory, thus, giving it a greater generalisability (Aguilera & Jackson, 2010; Wiseman et al., 2012). Institutional perspective involves identifying norms, structures, organisation and elements of a system. Therefore, viewing agency within an institutional context, is sufficiently universal, to help better

understand how, when, and why moral hazard arises as well as how it could be avoided. In the context of this study, institutional context will comprise the school and the home of the pupil that serve as the immediate environment of the child, the parents or community members, teachers as the principal and the child as an agent of change. In the light of this, the teacher (principal) must monitor the performance of the pupils (agents) and determine the structure of incentives and monitoring efficiency. This, therefore, make the agency theory applicable to this study. However, the weakness in institutional agency is when the norms, structure and elements in the institution are affected. This weakness is offset by the Behaviour Change Communication model.

Behaviour Change Communication Model

Behaviour change communication is an interactive process of any intervention with individuals and communities with the aim to develop communication strategies to promote and sustain positive and desirable behaviours appropriate to their settings (United Nations Population Funds [UNFPA], 2002). The BCC model is based on the combination of theories and models of behaviour change through the strategic use of communication to promote positive health outcomes. Proponents of BCC believe that just providing people with information and teaching them how they should behave does not necessarily lead to desirable change in their behaviour unless it is supported with communication.

Communication as defined by Wood and Attfield (2004) is a "systematic process in which individuals interact with and through symbols to create and interpret meanings" (p9). Wood and Attfield's definition depict communication is an on-going activity in which each of the part of this

activity is interrelated. Zolten and Long (2006) view communication as the act of sending information from one person to another either verbally or non-verbally. The Concise Oxford Dictionary (2011) defines communication as the act or the science and practice of transmitting information. These various definitions indirectly indicate a link between communication and teaching which is the act of giving knowledge and skills to another person (Hornby, 2010). Both concepts depict some kind of an impartation of information or knowledge either in words or body language from one person to another or a group of people. Therefore, communication is viewed as an act of transmitting knowledge of an idea from one individual to another through personal contact (Rogers, 2005). By this definition, Robinson (2009) observes personal conversations such as person-to-person communication or conversations between groups or individuals convinced others to adopt to a new idea (Eshuchi, 2013; Ohlin, 2012).

Since behaviour change thrives mostly on communication it assumes that through communication of some kind, individuals and communities can somehow be persuaded to behave in ways that make their lives safer and healthier. In the light of this, the vital role communication plays in health cannot be neglected. This is because health is created through the interplay of biology and the social determinants that shape human interaction. Therefore, communicating with children in health care contexts must acknowledge their rights to be informed about health care decisions that affect them (Elliot, 2010). Schools are often used as health care settings for health education.

Health education focuses on creating awareness to increase people's knowledge on hygienic practices; enhances a person's ability to think about healthy behaviours, become self-confident, use information to equip themselves with the necessary skills to put those decisions into practice and motivate people to take action to improve their health and that of others (Jeihooni, Kashfi & Hazavehei, 2013). In this regard, WHO/Institute of Occupational Medicine and Environmental Health [IOMEH] (2003) views information, education and communication (IEC) as very important ingredients in behaviour change practices. The BCC is therefore perceived as an instructional intervention which has a close interface with education and communication to achieve a desired change in the behaviour of a target group (Woods, 2006).

The BCC model indicates an iterative procedure an individual goes through during a behaviour change process. It further explains that when individuals or communities adopt new behaviours, there may be times when they may revert to old behaviours, at least under certain circumstances. Therefore, understanding where majority of the group is in the designing of any BCC strategy is crucial for the change agent. The BCC has several levels at which it can be implemented. These levels are individual, family and peer networks, community, social and public policy levels. Each level includes several theories and employs specific communication channels. At the individual level, behaviour is affected by innate factors of the individual such as knowledge; skills; attitudes; emotions and beliefs. The family and peer networks level are influenced by a person's close social and family circle such as peers, spouse, family and social support. Community level refers to

influences from the situational context in which the individual lives and in which social relationships are nested. The characteristics of the context are associated with risk and protective factors such as access to information, service provision, and collective efficacy. Social and public policy refers to the larger or macro-level environment which can either promote or deter behaviours. For instance; leadership, resources and service, policies, media and technology, and cultural values.

Therefore, this study adopts the individual level of BCC and employs the interpersonal communication channel.

The individual level of Behaviour Change Communication model

At individual level the model indicates that an individual practices a behaviour change when he /she becomes aware, expresses concern and becomes knowledgeable about it. With the knowledge acquired, he or she may be motivated to change the old behaviour and practice the new one. The model further indicates certain enabling or reinforcing factors that must prevail before this change in individual behaviour can take place. The use of effective communication through channels such as the mass media, community networks and interpersonal or group communication by the individual at each stage of the process is paramount. As argued by Glanz, Rimer and Lewis (2002) and O'Donnell (2004), combining efforts to enhance awareness, change behaviour and create an environment that support good health practices could lead to lifestyle changes.

This model is suitable for this study because a pupil may intend to perform or practice good WASH behaviour at home or in school base on his awareness and knowledge of performing the behaviour as well as motivation

from teachers, family members, friends and community members. Whether or not the child's own judgement can overcome the influence of those around him will depend on his strength of will. This is one area this study sought to unravel. School children, after knowledge acquired on WASH from teachers, may be expected to share the information and skills acquired and practice what they do in school at home. It is likely their family members and friends might be motivated or might not want them to practice those behaviours or may not listen to them. In this vein, the children are likely to conform to the wishes of their family members.

Figure 2 presents the iterative procedure an individual goes through during a behaviour change process at the individual level.

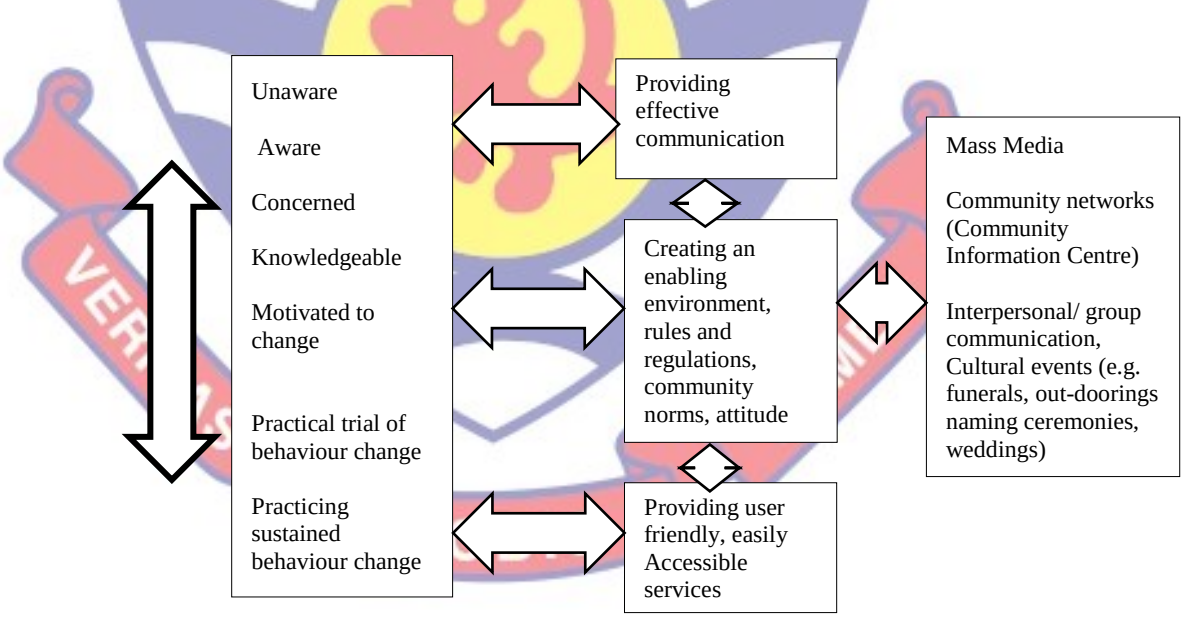


Figure 2: A framework for the Behaviour Change Communication Model at the Individual level

Source: Adopted from Africa Medical and Research Foundation (AMREF) (2014)

Lessons learnt

The review of the agency theory and BCC model has brought to light some major elements which are relevant to this study. For instance, the agency theory portrays that for agents (children) to serve as effective advocates of messages, they should be seen as actors who are capable and empowered to take active role in ensuring that there is change in their environments.

The BCC also indicates preconditions, enabling and reinforcement factors as well as the channel of communication among pupils, teachers, and households during interactions. Understanding the channel of communication among these actors is important in order for school children to properly disseminate the right messages to their family members. This can be done when they are provided with adequate knowledge and information on behaviours that are governed by rules and regulations and also have access to facilities and are motivated. This therefore helps to curb the challenge of informational asymmetry associated with the agency problem which also refer to as the agency problem.

Perspectives of children in the development discourse

Thorne (1987) described children as human beings born without language or knowledge of social organisation who are yet to be socialised in the adults' society. In this regard, social theorists characterised children mainly by what the "child is going to be, but not what the child presently is or is not" (Alanen, 1988 p 56). Children were then conceptualised as "pre-social, potentially social, and in the process of becoming social beings" (Alanen, p 57). Such processes of socialisation that children passed through were meant to shape them from being passive objects and victims of external influences to

perform their roles as agents of change in their societies. However, Alanen further explained that due to the difficulties researchers faced in recognising children as social actors as a result of adults' exclusive power in defining their roles in the society, conceptualising children that way could be problematic.

The latter part of the 19th century therefore witnessed the full conceptualisation and development of the idea of the vulnerable nature of children in the theories of socialisation and development by the functionalists. Jenks' (1996) views on childhood were based on the intrinsic and appropriate characteristics. These viewpoints presented children as "natural, passive, incompetent and incomplete" people who needed parents as well as state interventions to guarantee their childhood (James & Prout 1997, p x). Under such circumstances, context and culture became very critical in facilitating children's participation (Johnson & Scott, 1998). Therefore, Olayiwole et al. (2003) and Fernandez (2008) argued that in spite of the fact that biologically children were immature, how this immaturity was perceived and understood was culturally specific, because their potentials were mostly dependent on the power and knowledge hierarchies that surround them. This came to light as a result of the emergence of a new sociology of childhood theory, the structuralism, in latter part of the 20th and early 21st centuries.

Structuralism perceived childhood as a social construct rather than a universal model. Proponents of this theory believe that children were active social agents with special viewpoints who needed "social space to negotiate their own and each other's identity" (Boyden, 1997 p 223). For instance, Archard (2003) argued that children could achieve their full developmental potentials and act as agents of change when they receive and benefit from

specific services and protections through the family environment, health care activities and schooling. The viewpoint expressed by Boyden presented children as agents who could either be rebellious, transformational or conformant to the status quo, but denied their response to a broader authority and structure in a systematic and expectant way (Mosse, 2005). Therefore, Ansell (2005) proposed the application of an actor-oriented approach where children could be treated differently by the society, but with limited choice and power to act.

Fernandez (2008), however, critiqued Ansell's proposition because it could result in a complete lack of recognition of the role children play which could either lead to their marginalisation or lack of participation. He explained that children by nature develop into "rational social adults" when they receive appropriate care and support from home and school (Fernandez, p 3). Fernandez further pointed out that since children performed domestic roles at home and are taught literacy and numeracy as well as virtuousness and patriotism in school, they are able to develop their abilities and capabilities to contribute to the development of their society by acting as agents of change.

Giddens and Sutton (2012) offered different views on how children socialise. They defined socialisation as the process through which children become self-aware and knowledgeable. Drawing on Mead's theory on how young people develop a sense of self, that is, learning to see oneself as others see them, Mead (1934) perceived a two-part self of the individual consisting of the 'Me' and the 'I'. Mead explained that whereas the 'Me' is the social sense which is able to judge behaviour against social expectations, the 'I' is the spontaneous part of the self which responds to the 'Me).

Structuralism was, therefore, a shift from functionalism which perceived children as merely 'becoming' skilled knowledgeable members of society to perceiving children as active social agents or 'beings' in their own right who could interpret and construct their own lives, cultures and relationships (Gantheir, 2009; Skelton, 2007; Mannion, 2007). Although not clearly mentioned, but given the understanding of childhood as socially constructed, the 1990 United Nations Convention on the Rights of Children which was significant in making children's participation a priority, indicated the right of children to express their views in all decisions that affect them (Skelton). By this, the Children's Act, 1998 (Act 560) of Ghana acknowledged children's participation by indicating that:

> No person shall deprive a child capable of forming views, the right to express an opinion, to be listened to and to participate in decisions which affect his wellbeing, the opinion of the child being given due weight in accordance with the age and maturity of the child. (Part 1, sub part 1, p6; subpart 11, p8).

This acknowledgement perceived children's participation as a right, critical to self-development, fosters learning, builds life skills and enables self-protection (UNICEF, 2006). The implications are that, as children participated and became more aware of their rights, they assumed more active roles in their societies (Miller & Austin, 2008).

The notion of the child's evolving capacities is captured in Article 5 of the UNCRC (1989) which states that:

> Parties shall respect the responsibilities, rights and duties of parents or, where applicable, the members of the extended family or community

> as provided for by local custom, legal guardians or other persons legally responsible for the child, to provide, in a manner consistent with the evolving capacities of the child, appropriate direction and guidance in the exercise by the child of the rights recognised in the present Convention (UNCRC, p 5).

This notion is reflected in Article 12.1 which states that:

> States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child (UNCRC. A.12.1).

Hanson (2012) and Liebel (2014) pointed out that these different understandings of children's rights as presented in the UNCRC correspond to different perspectives. On one hand is a paternalistic tendency and on the other is the emancipatory or liberationist tendency. Paternalism is an action that limits a person or a group's liberty or autonomy and is intended to promote their own good. It can also imply that the behaviour is against or regardless of the will of a person, or also that the behaviour expresses an attitude of superiority (making decision for children rather than letting them take responsibility for their own lives). Emancipation is an act of giving people social or political freedom and rights. In other words, people are freed from another person's control.

Jans (2004) however observed that the transition from childhood innocence where children were mainly respected for emotional reasons, to adult's active life, made adults unable and unwilling to mould societies to genuinely benefit from children's growth and development. Such a move had

often created contradictions which resulted in the neglect of children's viewpoints from decision-making, rendering them as passive and dependent on adults who have to make decisions on their behalf. Therefore, Stuhmcke (2012, p 33) proposed a shift from "constructed meanings" that replicate existing power structures passed on by culture in the school curriculum to a "socially critical curriculum" where children are involved in social practices and structures through active and experiential learning by finding a better way to think and behave with the goal of bringing about positive change. In this light, it is important that educational facilities such as, the school encourages school children to think critically and empower them to shape their own lives and that of their families. This is what this study seeks to investigate.

Children as agents of change

The concept "agent of change" has been diversely defined. Connor and Lake (1988) define agents of change as "people who operate to alter the status quo in an organisation" in order to "cause parts of an organisation to operate differently from the way they have operated in the past" (Connor & Lake, 1988 p 107-108). Rogers (2005) perceived an agent of change as "an individual who influences clients' innovative decisions in a direction deemed desirable" (Rogers, p 4). The tenets of these two definitions seem similar in that while Connor and Lake's definition suggest an agent of change should have an interest in change and a vision for the future, Rogers portrays an agent of change as one who looks more to enhancing adoption, than, preventing the adoption of "certain innovations with undesirable effects" (Adelman & Taylor, 2011 p 4).

McKenzie (2009), therefore, presents (human) agency as a process that takes place within varied existing discourses where the subject is capable of picking up and resisting or destabilising alternative discourses. To McKenzie, learning is one process that gives learners opportunity to act as agents. In such context, MacNaughton and Williams (2009) posit that children could become change agents or agents of change when they learn to question and acquire strategies from the teacher who is perceived as the principal (Agency theory) to transform rather than to conform to situations.

Therefore, Liebel (2014) had argued that agency for children needs to be linked to broader social and attitudinal changes to allow children to actually do something with their newly-found power and negotiate various transformations in their identities and relationships.

Children's agency connotes a shift from perceiving them as objects of development initiatives to being subjects of these initiatives and as social beings or actors in their own rights (Christensen, 2004). Children, as agents of change, are often construed in the context of their social environments (school and home). As social actors, children are embedded in societal structures including power and knowledge hierarchies which could either help or constrain their abilities to act as change agents (Onyango-Ouma et al., 2005). As social beings, children engage in peer education which boosts their confidence, promotes critical and creative thinking, and develops their decision-making and problem-solving skills (CRS/GES, 2009). In line with these, Mwanga et al (2008) argues that school children act as agents of change when they assume the role of messengers of educational messages and practices through an action-oriented and participatory teaching and learning

approach. As noted by Mwanga et al, such approach ensures development of genuine participation and ownership of the educational process leading to a concrete change. Children's participation could be achieved when they all have necessary information, understand it and know its importance.

The concept of participation is needed when defining and deepening children's agency because it is the main precondition for the development of ownership among them so as to ensure that their education have influence on their practice and actions (Mwanga et al., 2008). Hart (1992; 1997; 2008) distinguishes between the different levels of participation. Drawing on the framework of Sherry Arnstein's ladder of citizen participation, Hart (1992) distinguishes eight rungs of children's participation in a metaphorical ladder as presented in Figure 3.

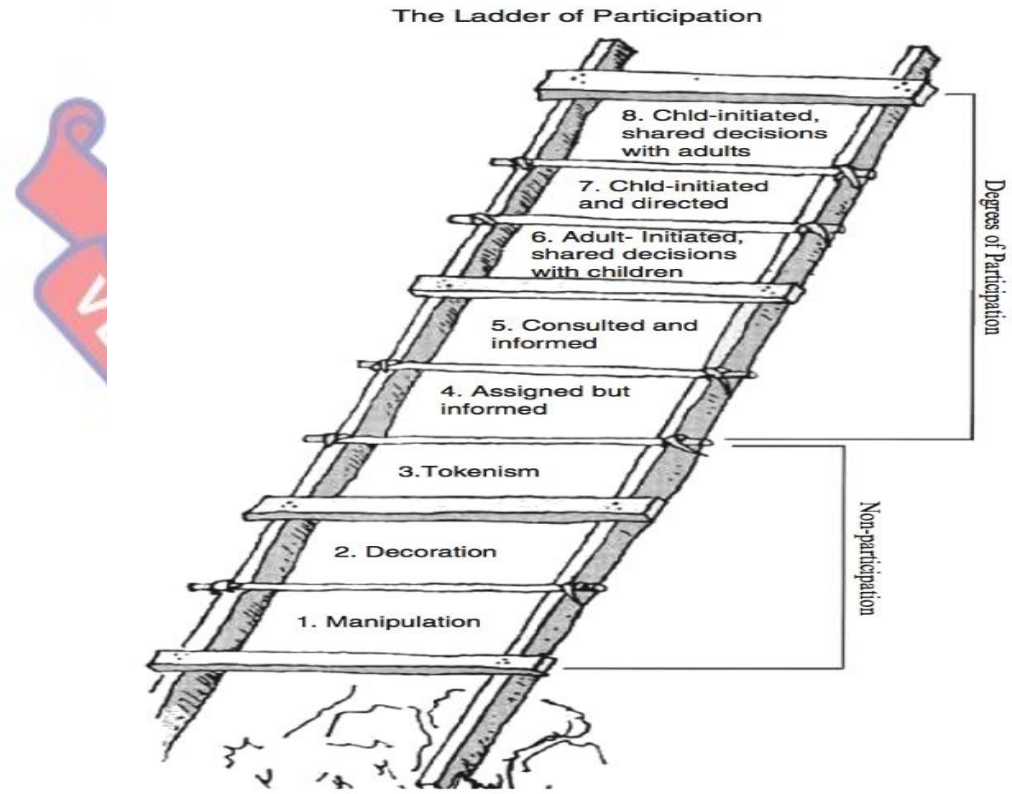


Figure 3: The ladder of children's participation

Source: Hart (1992)

Figure 3 shows a continuum of power that ascends from non-participation (no agency) to degrees of participation (increasing levels of children agency). The levels are explained in Table 1.

Table 1: Explanation to the continuum of children's participation

Mode of Participation	Type of Participation	Level of Agency
1. Manipulation	children do not understand the issues motivating a participatory process or their role in that process.	No agency
2. Decoration	children are put on public display during an event, performance, or other activity organised for a specific purpose, but they do not understand the meaning or intent of their involvement.	No agency
3. Tokenism	children are apparently given a voice, but have little or no choice about the subject or the style of communicating it, and little or no opportunity to formulate their own opinions.	No agency
4. Assigned but Informed	children understand the intentions of the project, know who made the decisions concerning their involvement and why, have a meaningful role, volunteer for the project after the project was made clear to them.	Very low
5. Consulted and informed	children act as consultants for adults in a manner which has great integrity. The project is designed and run by adults, but children understand the process and their opinions are treated seriously.	Low
6. Adult-initiated, shared decisions with children	adults initiate participatory projects, but they share decision-making authority or management with children	Fairly Low
7. Child-initiated and directed	children conceptualise and carry out complex projects by working cooperatively in small or large groups. While adults may observe and assist the children, they do not interfere with the process or play a directive or managerial role.	High
8. Child-initiated, shared decisions with adults	children share decision-making authority, management, or power with adult partners and allies.	Very High

Source: Adopted from Hart (1992)

Based on Hart's ladder of participation, Simovska (2000) distinguished between genuine and token participation. Simovska argues that genuine participation is directed towards children's own critical reflection. This kind of participation is perceived as a way of developing children's capacities to be active agents of their own learning and competence. Token participation is related to a health behaviour modification approach whereby children are encouraged to be active, but at the same time expected to adopt predetermined practices and behaviours which do not put their reflections in focus (Mwanga et al., 2008). In such a situation, they are not allowed to ask questions, and do not get accurate information. Children, therefore, fill the gaps in their knowledge with imaginations or rely on adults to provide information in terms they would understand and provide opportunities for their views to be heard (Elliot, 2010).

Hart's ladder of children participation has been criticised regarding its appropriate and inappropriate applications (Treseder, 1997; Driskell, 2002). In response to the critiques, Hart (2008 p 23) argued that "the ladder does not imply a necessary sequence of children developing competence in participation but also, a scheme which shows the degree to which adults and institutions can afford or enable children to participate". Hart dwells on the "competence" and "confidence" of children in their engagement with other people as outlined in the rungs of the ladder. To him, the ladder is more of competence than performance based. Therefore, the ladder does not promote adults relinquishing all power to children or children making decision without adults. However, Hart's position is "children's potentials as citizens needs to

be recognised to the fullest and, they ought to be able to participate at times at the highest possible level" (Hart, p 25).

Fernandez (2008) observed that bringing children into development projects through such kind of participation could be subject to "double tyranny", that is, "constraining and governing the childhood itself, and tying them to predetermined patterns and ends of neo-liberal development" (Fernandez, p5). In spite of these criticisms, children's participation in projects has been supported based on the practical reasons of improving the effectiveness and efficiency of projects and as a way of empowering children which often have a positive influence at the personal, familial, communal and institutional levels (Fernandez; Gallagher, 2008; Hart, Newman, Ackerman, & Feeney, 2004). Such levels of participation could be achieved, when children have all the necessary information and understand the need of the project; when their roles are clearly spelt out; and when clear rules and regulations are set out (Kinicki & Kreitner, 2008). For instance, it is observed that once children have basic knowledge about how diseases are caused, transmitted and prevented, they are able to take initiatives to prevent ill-health and educate fellow children and adults on the information acquired (Gallagher).

In this regard, Bell (2011) admits that children's rights to participate are often influenced by theories of cognitive development which is crucial in enabling practitioners to understand and to help them make sense out of their lives and work in age-appropriate ways. This, thus, resonates with Piaget's stages of cognitive development (Piaget, 1970; McLeod, 2018). Piaget made several assumptions about children in developing the theory. The assumptions are that; (a) children build their own knowledge based on their experiences,

(b) children learn things on their own without influence from adults or peers, and, (c) children are motivated to learn by nature because they do not need rewards as motivation.

These stages are age-specific and marked by important characteristics of thought processes. They also include goals children should achieve as they move through a given stage. Table 2 shows a summary of the various stages of cognitive development as proposed by Jean Piaget (1970).

Table 2: Piaget's Stages of Cognitive Development

Stages	Age	Characteristics	Goals
Sensorimotor	0-24 months	motor activity without use of symbols. All things learned are based on experience, or trial and error.	Object permanence
Preoperational Symbolic	2-7 years	development of language, memory and imagination. Intelligence is both egocentric and intuitive.	thought
Concrete Operational	7-11 years	more logical and methodical manipulation of symbols. Less egocentric and more aware of the outside world and events.	thought
Formal Abstract Operational	11-adolescent	use of symbols to relate to abstract concepts. Able to make hypotheses and grasp abstract concepts and relationships	concepts

Source: Piaget (1970)

Shaeffer (1994) opined that participation can be achieved when; (a) children make use of the available facilities on WASH and practice the WASH behaviour learnt; (b) children are delegated with powers to teach their peers and community members; and, (c) attend school WASH programmes as well as acquire skills and training in WASH. Eshuchi (2013) observes that parents have great respect for the learning and knowledge that their young children acquire through schooling and allow them considerable capacity to make independent choices based on such learning. Eshuchi believes that when children learn about hand washing in a school environment and they return to their houses, due to their position within the household, their learning and behaviours would usually be passed on directly to others in the home environment. The author further explains that, in most communities, school children are also care givers at home and thus can influence home health by taking ideas and behaviours home that could possibly influence parents and younger siblings. Children are also future parents and parents' desires for their children are often heavily tied up with their children's lives being better than their own (Eshuchi).

Making children change agents means enabling them to exercise agency or the power (ability) to learn, ask questions, challenge and acquire strategies to transform rather than to conform to situations without any difficulties (MacNaughton & Williams, 2009; Stuhmcke, 2012). Such skills create the avenue for them to construct their own knowledge, participate and exercise powers. By this, children become "message senders, "problem-solvers, problem-seekers and action takers in their own environment" (Davis, 2007, p2 as cited in Stuhmcke) their families, and their future generations. As

agents, children acquire not only decision-making advocacy and effective communication skills; but also build confidence that helps them now and later life. For instance, Mooijman et al. (2014) perceive that in Ghana, children boldly discuss issues that adults sometimes avoid and express their needs effectively in their communities and other fora when given the opportunity. The authors argue that by openly sharing ideas, thoughts and feelings about WASH behaviours, families and communities are able to improve their relationships by addressing critical problems that affect children's health.

Muzaki (2011) observes that when children become change agents in health promotion, boys and girls are able to discuss issues of menstrual management together without fear and they are able to demand for WASH facilities from those responsible. Muzaki further posits that when such initiatives are taken by children they often lead to the promotion of menstrual hygiene of adolescent girls, reductions in absenteeism and improvements in the personal hygiene which are often appreciated by parents. Mooijman et al (2014) further acknowledge the effectiveness of children in educating other children and adults on matters of importance to them all, such as keeping the environment clean. Since children are perceived to be more receptive to health education messages than adults, using them as change agents for health messages is therefore essential and effective (Singh, 2013).

Yet, unlike adults, the importance of using children as agents of WASH education and promotion is often neglected and therefore not prioritised in the dissemination of WASH behaviour information (Williams & Leherr, 1998). Williams and Leherr observe that children are not recognised as a source of influence of change in public health in their schools and

communities. They argue that because traditional views have often equated status and old age with wisdom, adults often assume that they know best (Williams & Leherr). Therefore, the family (adults) tend to assume a higher influence over their children's lives compared to the school. Anamuah-Mensah (2004) also observes that the Ghanaian society, for instance, has pre-arranged a sort of hierarchy of social privileges whereby the portion of child is located at the very base of the pyramid. In this way children are only expected to obey commands or take instructions thus, they are often dominated by coercive power in which they are expected to unquestionably accept the values of the society or culture in which they are born into. Therefore, the ability of children to act as health messengers or change agents may often be limited (Gadhoke, 2012; Miller, 2005).

Leena and De Souza (2014) believe that the principle of children as agents of change in WASH behaviour practices reflects faith in the power of children to spread health messages and practices to peers, families and communities, together with the conviction that they should enjoy and profit from doing so. In such a situation, interactions between children, teachers and parents play a key role in children's role in the dissemination of WASH information.

Influencers of children as agents of WASH behaviour change

Socio-cultural theorists such as Vygotsky (1978) assert that children perform better in the acquisition of a new skill or solving a new problem if they are assisted by people who are more capable, informed, skilful, or an expert rather than acting alone. According to Bandura (1977) once an individual witnesses another's behaviour, he or she may be inclined to adopt

this behaviour as his or her own, and eventually build it into their personality profile. Bandura believes that self-confident children affect the world in constructive ways, thus, interactions between children with the peers and adults are critical (Bandura, 1997). Giddens makes a distinction between primary and secondary agents of socialisation. According to him, the child's immediate family, the parent, is the primary agent whereas the school, peer group, the media and other organisations are the secondary agent of socialisation (Giddens, 1991).

Parents

Milakovich, Simonds, Held, Picket, LaVeaux, Cummins, Martin, Kelting-Gibson (2018) believe that interventions using children as agents of change are often built on established bidirectional interactive relationships between children and their parents. According to the authors, this method of communication means children and parents have responsibility to engage in the dissemination of information. In this light, parents start the conversation and are eager to listen to their children by providing encouragement and support for children to communicate. Such fluid verbal interactions allow for seamless transfer of information (Mwanga, Jensen & Magnussen, 2008).

As primary agents of children's socialisation, parents are motivated to offer their very best to their children. They do this by raising children in a caring, encouraging and a supportive environment to contribute to their abilities to develop good self-esteem to better deal with outside situations and influences they may encounter (Bandura, 1977).

The teacher

At the school setting, the teacher acts as a role model to their pupils (Jason & Eshuchi, 2007). Bowlby (1969) observed that although young children form attachments to a responsive and reliable caregiver, who is generally the biological mother, others, such as teachers, could take this "mothering" role. In this regard, availability of a trusting and secured relationship with a professional is considered a good participatory practice in the child's life (Knowles, 2014). It is in this context of a securing and trusting relationship that children can assimilate information and make informed choices as to what their views are and how best they can be represented as they exercise their rights to participate and provide services.

Vygotsky (1978) in his socio-cultural theory indicates that children's inexperienced thinking can be influenced by their relationships with others, such as teachers, who are more capable, informed, skilful or expert other than the learner. Vygotsky further asserts that since knowledge, skills, and expertise are predominantly resided in the expert who offers the platform to the learner for continuous practice, children perform better in the acquisition of a new skill or solving a new problem if they are assisted by an expert rather than acting alone. Therefore, it is essential that teachers are educated and trained to inspire and equip them with knowledge and skills that make a curriculum exciting and promote their own positive health behaviours in order to enhance their role as models in the school (Grace, 2012).

Willgoose (1974) acknowledges that without the teacher, health personnel would be handicapped. The classroom teacher is construed as the best person to contribute to children's health as they provide leadership in

hygiene related issues within the school as well as keystone efforts to strengthen children's achievement (Snel, 2003). Teachers are able to detect any abnormalities in children's behaviour, make referrals to appropriate health facilities and make follow-ups on children who deviate from normal health. Teachers do daily inspection on pupils to check their hair, nail, teeth and other parts of the body for good personal hygiene and supervise the cleaning of the compound to ensure that children practice proper sanitation and good health habits (Ampeh, 2008).

The community

The community also plays a critical role in children's development and their health. The Alma Ata Declaration in 1978 and the Ottawa Charter in 1986 in advocating for a holistic view of health behaviour acknowledge the involvement of the community in school health education programmes (Lynagh, 2004). This is because since schools are located in the community, they become part of the community therefore, any information on health education that children acquire is spread to the home and the entire community (Snel, 2003).

The community influences the school by providing the cultural setting and material resources in which the school operates, reinforcing what has been taught in school by participating in school's extra-curricular activities such as speech days and open days. Vygotsky (1978) opines that such social interaction leads not only to increased levels of knowledge, but changes children's thoughts and behaviours. Such interactions and exposures to various cultures need to include mediation in order to expand children's pool of

knowledge (Grace, 2012). In this study, school children are considered as the primary actors of which all actions evolve.

Relationship between Water supply, Sanitation and Hygiene Behaviours

The interactive effect of clean water supply, proper sanitation and hygiene behaviours on the prevention of diseases especially among school children cannot be overlooked. Water plays a vital role in nearly every function of the human body by protecting the immune system and helping to remove waste matter from it (WHO, 2003). Access to an improved water supply is when a source is easily accessible, reliable, affordable, available (quantity and quality), and safe for domestic use (United Nations - Water Decade Programme on Advocacy and Communication [UN-WDPAC], 2012).

Sanitation is the safe management of human excreta from the point of defecation to its disposal and treatment or re-use (Dangour et al., 2013). Access to a sanitation service is to use a functioning facility of adequate standard (by the WHO/UNICEF Joint Monitoring Programme (JMP)) within a reasonable distance from home (WaterAid, 2011). The lack of access to a secured, convenient and private sanitation or excreta disposal forces people especially in the rural areas in Sub-Sahara Africa to practice open defecation exposing them to sanitation-related diseases, such as diarrhoea, the lack of privacy and indignity (WaterAid, 2011).

Health scientists view hygiene as “the practice of keeping oneself and one’s surroundings clean” (Scott, Curtis, Rabie & Garbrah-Aidoo, 2007, p 231). Peal, Evans and van der Voorden (2010) add another dimension to this view when they refer to hygiene as behaviours and practices that help to

maintain good health and prevent the spread of diseases in the home or community.

Waddington, Snilstveit, White and Fewtrell (2009) posit that improving water supply, sanitation and hygiene practices do not only reduce the risk of contracting gastrointestinal illnesses but provide barriers to pathogens which are carried from faeces into the body through the fluids, fingers, flies, fields and food. In what has been termed the "F Diagram", Kendie (2002), Borkowski (2015) and Brockett, Wolfe, Hamot, Appiah, Mintz and Lantogne (2019) explained the interconnectedness among sanitation, hygiene and clean water by the various routes through which pathogens get transmitted from faeces to human beings. The authors explained the routes as: (a) fluids (when faeces contaminate drinking water); (b) fields or soils (when waste including excreta are disposed indiscriminately and pollute the soil on which children play); (c) fingers (when hand washing after defecation is not a common practice); (d) food (when left over foods are not well protected from contaminants and eating habits are poor); and, (e) flies (when flies and other insects sit on faeces and move to the food for human consumption.

Kendie (2002) further distinguishes between two important barriers, primary and secondary, that prevent the spread of diseases. According to him, primary barriers involve the prevention of faecal pollution of the environment through the provision of clean water and sanitation facilities (latrines). Secondary barriers, on the other hand, are the changes in hygiene behaviours such as handwashing, care for water and food which are recognised as critical to disease prevention. This relationship is shown in Figure 4.

Figure 4 indicates that poor WASH related conditions that lead to gastrointestinal diseases can be prevented by the provision of clean water, (from source, treatment and management), proper sanitation (access to latrines, and waste disposal) and good hygiene practices (such as hand washing, care for water and food).

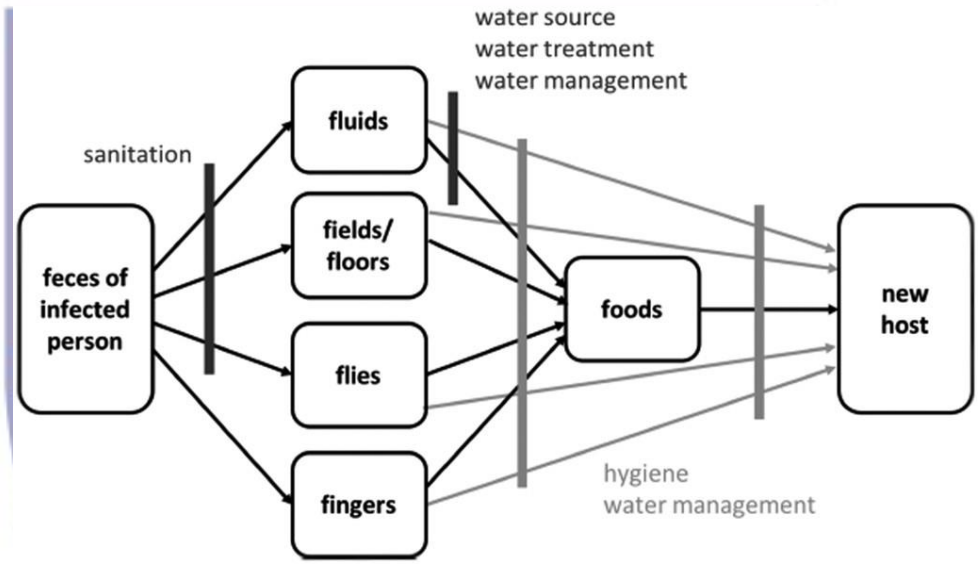


Figure 4: Faecal-oral routes of disease transmission

Source: Brockett, Wolfe, Hamot, Appiah, Mintz and Lantogne (2019)

Van Wijk and Murre (2003) observe that since WASH behaviours are many, studying all together can be very complicated thereby giving rise to too much data. Assefah and Kumie (2014) add that attitudes, knowledge and beliefs are some of the causal measures to behaviour change practices. Therefore, poor knowledge, attitudes, and practice of personal hygiene and sanitation behaviours have negative impact on the long-term development of children. Going by the arguments of these authors, this study is limited to three specific WASH behaviours that are perceived as most critical in preventing many WASH-related diseases especially among children. The behaviours are: (a) storing drinking water safely. Safe storage of drinking

water means at least keeping it covered in a clean container and storage area, water with no visible particles and the presence of a dipper near the water container. (b) Latrine use. Having and using a latrine mostly helps in removing human excreta from human contact thereby preventing diarrhoea and other gastrointestinal diseases. Since the bacteria, viruses and parasites that cause these illnesses get into the body through the mouth or skin and are passed out in excreta, they can be passed from one person to another through unclean hygiene practices. To have a strong health impact, all children and adults in the school and at home must use latrines consistently. According to Bolt and Caincross (2004) latrine use could be measured by the presence of a proper latrine with a superstructure and door, and evidence of latrine use. Evidence of latrine use looks at whether there is a clear path to the latrine, or there are excreta in the pit, or the environment is free from excreta, and whether there is open defecation free, whether latrine is maintained whether the floor is clean, the hole or trap and the walls are free from excreta. (c) Personal Hygiene. This includes hand washing, brushing of teeth, bathing, washing of school uniforms, and maintaining clean nails. Hand washing according to Bolt and Caincross (2004) is a complex behaviour which often requires knowledge, skills, practice and enabling environment. The elements that could serve as approaches to measure hand washing are: availability of resources such as water and soap; knowledge of hand washing times. These include critical washing times. Critical washing times are considered to be: before eating, after defecation, after handling excreta of infants; skills in washing hands correctly. This involves rubbing hands using soap or ash or adequate water;

and actual practicing of hand washing. This involves whether people actually wash hands correctly at the most critical times.

The elements that could also serve as measurement for the other personal hygiene practices are: knowledge on how and when to maintain clean teeth, finger nails, bathing and washing of clothes; skills in cleaning teeth, bathing, and washing clothes correctly; enabling environment is the facilities and resources that could aid in the practicing of such behaviours and actual practicing of these behaviours at home and at school.

Studies have indicated that ordinary people rarely carry out hygiene behaviours for health-related reasons. Factors such as wishing to appear attractive, smell good, remove dirty contaminating matter from one's life, or protecting children are increasingly cited as reasons for being clean (Biran, Tabyshalieva & Salmorbekova, 2005; Scott et al., 2007). Some authors observe that in spite of acquiring good knowledge, it is often difficult for people to act accordingly. This is because having knowledge regarding the health risks on WASH diseases as well as the mode of transmission, does not in many cases reduce the risk (Scott; Schultz & Kaiser, 2012). Assefah and Kumie (2014) observe that merely providing water supply and sanitation facilities is not enough to bring down morbidity and mortality unless it is linked with hygiene education and effective communication.

Health Education in the Basic School Curriculum in Ghana

Although it has been established, to a larger extent, that the achievement of an effective school health delivery is often perceived as a critical condition for achieving the goals of education, Pridmore (2007) conceded that school health education has traditionally been accorded low

status within the curricula of most countries, especially, in Sub-Saharan Africa. Pridmore observed that school health education in most of these countries comprises a few lessons on hygiene, sanitation and nutrition within the science or the domestic science curriculum which spread information to the individual child but makes no attempt to respond to the need to find collective solutions to health problems and concerns, and Ghana is no exception.

Prior to the new educational reforms in Ghana, Adu-Mireku (2013) observed that the introduction of health-related topics into the curriculum was achieved through the educational programme. In making reference to the curriculum guidelines of SHEP, Adu-Mireku pointed out the various health issues that were required to be covered in the curriculum at the basic level. Among such topics were personal hygiene, environmental sanitation, nutritional needs, avoidance of diseases associated with contaminated food, food hygiene, water-borne diseases, adolescent sexual reproductive health, Sexually Transmitted Disease, Human Immuno-deficiency Virus/Acquired Immuno-deficiency Syndrome, good grooming, accidents in the home and the school and child labour (G-SHEP, n.d.).

These guidelines of SHEP also required schools to use two strategies to cover health issues in the curriculum. The first strategy was the Unit Course Approach designed to introduce health issues under specific units of the course syllabi of core subjects (Environmental Studies, Integrated Science, English, Social Studies, Science, Agricultural Science, Geography and Life Skills). The second strategy was the Integrated/Infusion Approach which was designed to integrate or infuse health issues into the core subjects in a topical

fashion (G-SHEP, n. d.). The guidelines further recommended the use of the following participatory teaching methods in the curriculum such as role play, dramatisation, case study, values clarification, future's wheel, brainstorming, storytelling and discussion methods.

The educational system in Ghana is structured into basic, secondary and tertiary. The basic lasts for 11 years with the aim of providing minimum schooling needed to ensure children acquire basic literacy, problem-solving skills as well as skills for creativity and healthy living. Basic Education comprises 2-year Kindergarten (KG), 6-year Primary; and 3-year Junior High School (JHS). According to National Council for Curriculum Assessment (NaCCa), (2019) the KG level is aimed at pre-disposing children to conditions of formal schooling, inculcating in them the desire for learning and providing opportunities for the overall development of children. Among other things, the KG is to nurture children in safe and caring environments with appropriate infrastructure, which will allow them to become healthy, alert, secure and able to learn. The 6-year Primary, apart from consolidating the knowledge and skills acquired at the KG level lays the foundation for inquiry, creativity and innovation, inculcates good citizenship in children, develops an understanding of how to lead a healthy life and achieves a good health status through the study of Life Skills and Hygiene. The final 3-year JHS provides opportunity for pupils to discover their interests, abilities, aptitudes and other potentials. Thus, SHEP, which seeks to improve the enrolment and achievements of school children through improved WASH practices, was introduced at the basic level.

An examination of the 2012 and 2019 Curricular for Primary School indicted in Table 3 and Appendix A indicates that water, sanitation and hygiene education related topics fall under Science under the topics Interaction of Matter and Humans and the Environment (National Council for Curriculum and Assessment [NaCCA], 2018).

Table 3: WASH topics and strategies proposed for its delivery in the basic school curriculum

Level	WASH Topics taught (content)	Method of teaching
Basic 1 and	Personal hygiene: The importance of hand washing; cleaning of teeth; keeping the finger nails short and clean; washing cloths; taking good care of the hair; and bathing	discussion demonstration
Basic 2	Need to keep their environment or surroundings clean	explain and demonstrate
Basic 3	Causes, effects and solutions to body odour, sharing of personal effects, water pollution and water purification	discussion and demonstration
Basic 4	Some diseases that affect the skin, the causes, effects and prevention of skin, diseases	brainstorm explore and discover
Basic 5	Water borne diseases, symptoms, causes, effects and prevention with specific emphasis on cholera and typhoid, and HIV AIDS	discussion, use of posters describe video brainstorming
Basic 6	What and how food is processed and preserved what is food poisoning, the causes, effects and solution to food poisoning	demonstration and discussion

Source: NaCCA (2018)

The syllabus covers personal hygiene, sanitation, water purification, water pollution and water borne diseases. Aside the main curriculum, Khanal, Mendoza, Phiri, Rop, Snel and Sijbesma (2005) acknowledged that the establishment of school health clubs, which serves as an extra curriculum activity, introduces basic school children to basic hygiene and sanitation for healthy living.

School Health Clubs

According to Mooijman, Esseku and Tay (2013), the concept of School health clubs is to provide children with opportunity to organise themselves to learn about issues that affect their health which will enable them make informed decisions. School health club is a voluntary group at the school level in which pupils meet, under the supervision of their teachers to learn, discuss and take action on issues related to their health and wellbeing whilst in school. The focus of the club is primarily on the health of the pupils with emphasis on WASH. The Club is a recognised school level grouping at the basic school level and all schools across Ghana are encouraged to form one. The school health club has:

Regular Members: these are mainly pupils who have registered to be members of the Club. They are called ordinary members. Club executives (Club President, Club Vice President, Club Porter, Club Secretary, and Club Organising Secretary) are elected from amongst the ordinary members. Ordinary members are expected to take part in all Club activities and contribute to the sustenance of the Club.

Associate Members: these are adults who support the school health club in diverse ways. They can provide financial support, material support, technical

or professional support. Parents, health workers, NGOs, businesses and corporate bodies who support the school health club in any way are Associate members of the Club.

The Club has five executive members. These are the Club President, Club Vice President, Club Secretary, Club Organising Secretary and Club Porter. The three members of the School Health Team are the Patrons. They supervised the School-based Health Coordinator. Members in the SHCs meet at least once every week to plan on drawing simple activities to undertake to improve the general health and hygiene conditions of the school, helping in educating their peers on environmental cleanliness and hygiene such as menstrual hygiene, safe disposal of human excreta, water handling, transportation and storage. The SHCs also embark on clean up exercises in school and in the communities, care for and protect WASH facilities in the school, conduct outreach programmes on WASH by visiting homes and giving education on WASH in general at their own convenient time, mostly after school, and working in cooperation with other WASH agents such as Media Corps and Children and Youth Ambassadors to ensure the effective implementation of WASH activities.

The School Health Club is also a vehicle through which pupils are empowered to play an active role in deciding and implementing health-related issues when in school (Mooijman et al., 2013). The Club also affords the pupils the opportunity to become 'Agents of Change' who carry home and translate into action healthy habits and information they learn at school. In this way pupils influence their sibling, parents and friends who might be out of school. Khanal et al (2005) further observed that School Health Clubs (SHCs)

help children to develop skills to organise and plan, implement and evaluate action. The clubs also stimulate safe hygiene behaviour, help to achieve the proper use of SSHE facilities and help the proper maintenance of SSHE facilities. They are means for reaching out into the communities to develop gender and social equity in how children understand and divide hygiene-related work and decision-making and organise sanitation and hygiene games and competitions in school as well as events for parents, families, and the community.

These indicate that the introduction of SHEP in Ghanaian schools, which is aimed at ensuring the delivery of skill-based health education and safe and healthy school environment among other things, is in the right direction. In effect, the provision of safe water and improved sanitation is one of the three key intervention areas under the safe and healthy school environment programme (GES, 2010).

Studies on School Children serving as Agents of WASH Behaviour Change Practices

The vulnerable nature of children in WASH promotion and education has strongly been contested in policy as most government guidelines on the implementation of health intervention programmes now recognise children's knowledge regarding hygiene issues, and have begun to include children in health promotion and education programmes (Deepthi, Kumar, Kamath, Rajeshwaric (2014). This recognition, as Deepthi et al further observed, is as a result of the perception about children as sources of knowledge on hygiene behaviours and practices and the acknowledgement that their exclusion may affect the long-term goal of health and educational achievements. The authors

further acknowledge that children assume the role of messengers for educational messages and practices through an action-oriented and participatory teaching and learning approach which is aimed at ensuring the development of their genuine participation and their ownership of the educational process (Deepthi et al.).

Traditionally, adult caregivers have been considered in public health as agents as well as sources of influence of change thereby limiting the capacity of children to act as messengers (Gadhoke, 2012). However, with the recognition by the Convention on the Rights of the Child in 1990, that children are the future of every community, researchers are convinced to accept this paradigm shift in public health interventions by involving children as agents of change for adult and their own health behaviours (Gadhoke, 2012). Thus, the UN's advocacy in using schools to "train all humanity into a new set of values, attitudes, and beliefs in preparation for the new 'green' and 'sustainable' world order by making children agents of change" is in the right direction (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2017, p16).

Several studies have used innovative approaches to explore how school children can be effective agent of change in their schools, peer groups, families and communities (Bresee et al, 2014; Mohapatra, Sankar & Mohapatra, 1993; Mwanga et al., 2008; Nonaka et al., 2008; Okabayashi et al. 2006; Onyango-Ouma et al., 2005; Walvekar, Naik, Wantamutte & Mallapur, 2006). However, these have concentrated on the control of particular WASH behaviour, with none looking at WASH as a whole in a single study.

For instance, a study by Onyango-Ouma et al (2005) using action-oriented and participatory approaches, which assessed the potential of school children as health change agents in a rural community in the Bondo district, Kenya, revealed improved knowledge pertaining to malaria among children. Another study in Thailand by Okabayashi et al. (2006) using pre-test post-test experimental approach, reported an improvement in knowledge, attitude and practices pertaining to malaria among school children when they disseminated information on malaria to a community by issuing newsletters, placing billboards and holding village events (Okabayashi et al. 2006). Nonaka et al (2008) in their study in Lao using the experimental design (control and intervention group), demonstrated an improvement in the behaviour of school children in relation to malaria control. Mwanga et al's (2008) study on the role of school children as health change agents in Magu, Tanzania, using an action-oriented and participatory approaches revealed that participants favoured an approach where school children played an active role as health change agents in a combined school and community health education project. Children learn by doing therefore, they are eager to learn and communicate health messages to their families (Mwanga et al.)

Health education makes children feel responsible for their own health. Patil, Solanki, Kowli, Naik, Bhalerao and Subramania (1996) observed that when children acquire health-related knowledge and skills, they become well placed to pursue a healthy life and to work for the improved health of their families and communities. Geissler, Nokes, Prince, Odhiambo, Aagaard-Hansen and Ouma (2000) in their study in Kenya which employed weekly interviews, reported that a considerable number of children self-treated their

illness without help from their caregivers. Researchers assert that once children have basic knowledge about the causes, transmission and prevention of diseases, they are able to take initiatives to prevent diseases (Mwanga et al., 2008). Children often demonstrate this by educating other children and adults on health education, meeting others in a play or an activity, and advising fellow children on various issues pertaining to health. In this way, children perform the job of a teacher (family teacher) by educating their families on what is good or bad for health (Mwanga et al.). Children have the opportunity to serve as change agents and communicate the health message to the community (Nonaka et al., 2008 p 80).

A broader view of children as change agents captures children as individuals who make things happen in different social environments (Onyango-Ouma et al., 2005). In their study, to determine the potential of primary school children as health change agents, Onyango-Ouma et al noticed an improved knowledge about health and changes in daily practices among children than among adults as children played important and leading roles in changing health behaviour in the society. The study further showed changes in both the school and the home environment. As teachers gave primary school children education about malaria, diarrhoea and hygiene their knowledge and daily practices on hygiene routines and health awareness also improved.

Children are again perceived as quick learners, resourceful, role models and enlightened people respected by adults due to their acquisition of skills and knowledge at school (Mwanga et al., 2008). The authors found that parents mostly trust their children in school because they perceived their teachers as trusted source of information. Therefore, parents and teachers have

positive attitude towards successful health message dissemination by utilising children as health messengers whom they view as capable of bringing about positive change to their families and communities (Mwanga et al.). Children use the knowledge and skills learned through their interactions and learning experiences to influence the attitudes and behaviours of the parents and other community members.

In an additional study conducted in Lao People's Democratic Republic which sought to determine the effects of school-based malaria education on societies in developing countries, Nonaka et al (2008) found that since the health education on malaria given to children in primary school improved their knowledge, attitudes and practices the authors concluded that these children could act as health change agents by using the knowledge not only for themselves but also for their families. In a related study in Ghana by Ayi et al (2010), which explored engaging children as health messengers, the authors using the experimental approach, (control and intervention groups), pointed out how schools and local health education authorities can cooperate to involve children in reducing the malaria prevalence. It was observed that since teachers had adequate knowledge about malaria, its prevention, treatment and symptoms, they can explore different teaching methods and design health education activities concerning malaria for schoolchildren. The study revealed an improvement in knowledge about malaria in the whole community, for both children and adults because the children learned about malaria transmission and prevention and they were involved in educating the community (Ayi et al.).

The authors concluded that by disseminating knowledge about malaria to their family, friends and society, and improving their knowledge on the disease, children became part of improving the health of the community at large (Ayi et al., 2010). The study found that most parents and families were also receptive to learning from the children; because they trusted the information their children brought from school, and perceived the information to be more trustworthy.

Results on the empirical studies reviewed found that certain antecedents (such as knowledge, trusted source, training, desire proper WASH conditions) were necessary for schoolchildren to disseminate WASH messages from school to home and influence the WASH behaviours of their families and friends in their communities. Bresee et al (2014) in their exploratory studies on the potential of using school children as agents of WASH in school, for instance, indicated that the parent-child communication starts from the teacher who is seen as knowledgeable and a trusted source of information by both children and parents. Drawing from the theory of Diffusion of Innovation by Rogers (2005), and employing a participatory approach, the authors argued children could influence their parents WASH behaviours when the teacher serves as a role model and provides discrete instruction on WASH to them. The children may in turn teach and remind their families constantly about practicing safe WASH behaviours. The families on the other hand must trust teachers, be receptive and willing to communicate to children about safe WASH.

It is evident that most of the empirical studies reviewed focus mostly on school children's role as agents of change in promoting a particular WASH behaviour practice to the neglect of the three key WASH behaviours already mentioned. Also, most of the studies carried out in developing African economies are in East Africa, much to the neglect of West Africa economies, such as Ghana. The gaps created in literature have informed the direction and content of this study with specific reference to the conceptual framework, data analysis and presentation, as well as the discussion of findings of this study.

Conceptual Framework for Children as agents of WASH Behaviours Change Practices

The review of literature has brought to the fore the contributions and appropriate application of theories as well as empirical reviews on the role children play as agents of change in water, sanitation and hygiene to achieve the required behaviour change practices. This study proposes a framework adapted from the theories and conceptual issues already discussed. It combines and adapts the Agency theory and the BCC model. The conceptual framework proposed for this study is similar to the model by Bresee et al (2014) in their exploratory study on the potential of using school children as change agents in the context of school WASH in rural Zambia. The model was based on the Diffusion of Innovation theory by Rogers (2005) and guided by the grounded theory approach in their data collection method. In the model, Bresee et al indicated three main elements which are vital for children to be able to influence their home WASH environment and act as change agents. These elements were antecedents, actors as well as actions involved in disseminating WASH messages from school to home. The model presented teachers as

people who are knowledgeable and provided children with WASH information through instructions. The information pupils acquired from teachers at school was then shared with peers and family members at school and at home. By constantly reminding parents about safe WASH, parents were able to change and increase their home-based WASH environment and behaviours. However, the authors stressed the importance for parents to trust teachers and pupils. Pupils in turn must be confident in their ability to talk to their parents and peers about safe WASH, a suggestion Prozesky (2000) portrayed as an important requisite for effective communication.

Unlike Bresee et al.'s (2014) model, this framework considers four major elements which are crucial for school children to be able to communicate WASH information and influence their school and home WASH behaviours. These elements are; the preconditions, actors involved, actions needed to perform, as well as the enabling and reinforcing factors. Before school children can act as agents in WASH behaviour change, the framework indicates certain preconditions under which the actors can perform certain actions when the needed skills and resources are available in the dissemination of WASH messages. For the teacher who is perceived as the principal (agency theory), it is essential that he or she is trained, has an in-depth knowledge in WASH issues, and motivates pupils to change their behaviour. Teachers are to ensure the availability and accessibility of WASH facilities and learning materials for pupils. Teachers are expected to remind, guide and interact with pupils daily to ensure that pupils practice proper WASH behaviour. In addition, teachers are to be seen as trustworthy and to be respected by their pupils and by parents.

Teachers as principals, according to the Agency theory, on the other hand, must act as role models in practicing safe WASH. They must further teach pupils about WASH and imbue in them the knowledge and skills for them to communicate effectively to parents. Teachers are to constantly remind pupils about safe WASH in schools. School children on the other hand can act as agents of change when they interact and share WASH information with their peers. They must teach their families about safe WASH; constantly remind family and peers about safe WASH must be seen practising sustained WASH behaviour change in school and at home based on the outcome of the knowledge on safe WASH acquired. The framework further indicates that children confidently act in this capacity because of their knowledge on WASH behaviours acquired from their teachers. Family, peers and community members are expected to practice safe WASH to show that there is behaviour change.

Pupils who are agents pass on what they have learnt at school from their teachers (principals) to their parents under certain preconditions which are vital to their role as agents. These preconditions are; awareness, knowledge in proper WASH behaviours, trusted by family, and be ready to interact well with family members. Pupils are further expected to show concern and desire a safe WASH environment both at home and at school; they must be confident in speaking to their parents and peers about safe WASH, and must believe in their capabilities to perform the behaviour and influence that of their families. Pupils desire for families and peers learn about safe WASH behaviours and practices could later serve as a stimulus for pupils

to learn from teachers who are their role models, and practice the behaviour by themselves.

The framework as shown in Figure 5 further depicts that, parents, peers and the community can be receptive to learn about WASH behaviours from their pupils based on their socio-economic background (age, education level, occupation, and major earners), respect and trust teachers as trusted source of information, belief in and want to practice safe WASH, are ready to communicate with children, and build a positive attitude toward safe WASH as discussed in the BCC model.

Reinforcing factors are rewards or punishments expected as a result of behaviour change. The family, peers, and the classroom teacher serve as a motivation for pupils to learn WASH behaviour. Pupils' desire for families and peers to learn about safe WASH practices could serve as a stimulus for them to learn from teachers who are their role models, and practice the behaviour by themselves as well as teach their families. Therefore, when children are able to influence the behaviour practices of families they would in turn practice safe WASH.

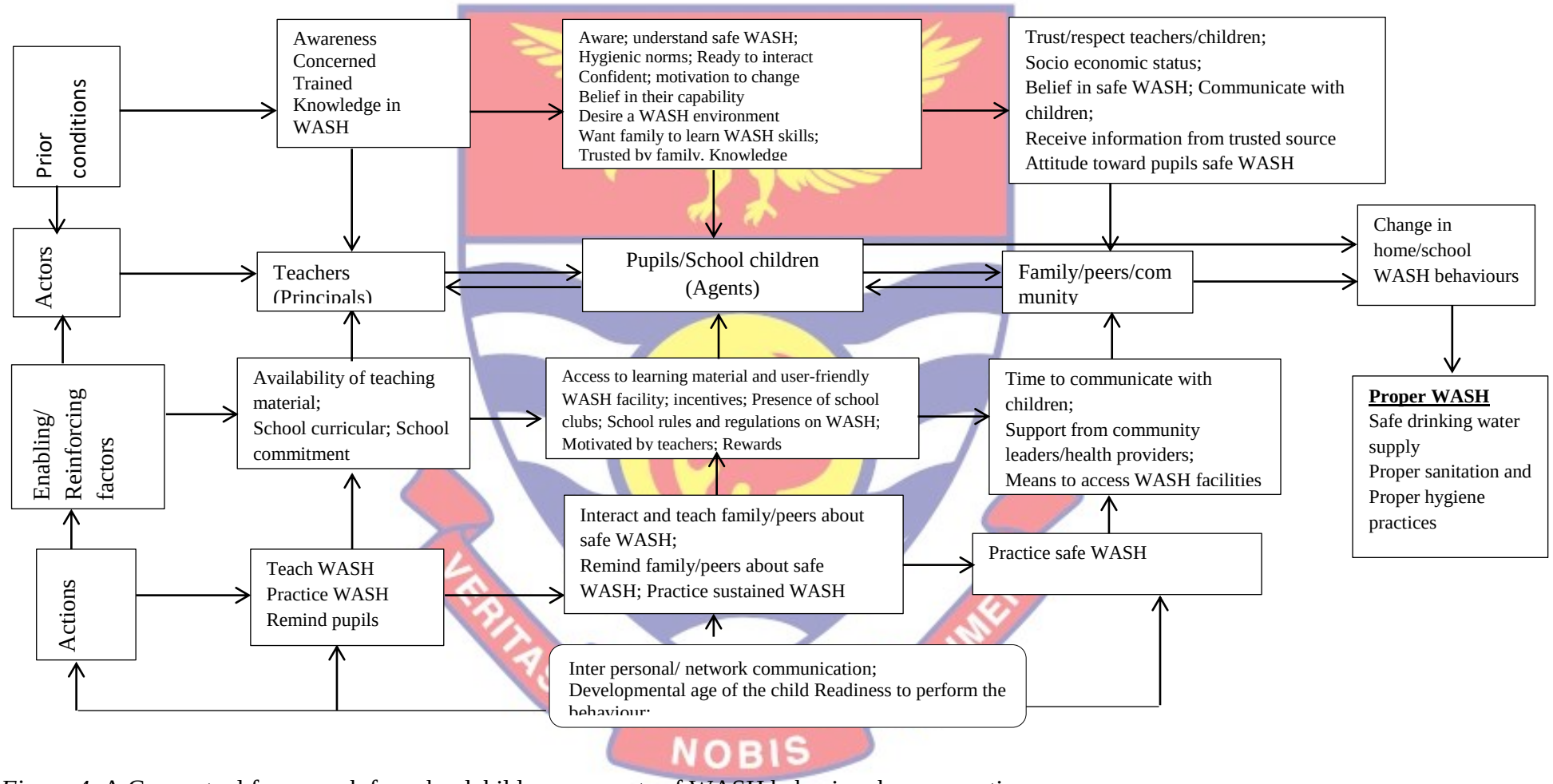


Figure 4: A Conceptual framework for schoolchildren as agents of WASH behavior change practices

Adapted from Dube and January (2012) and Bresee et al (2014)

Enabling factors on the other hand are characteristics of the environment that facilitates the action and any skill or resource required to attain specific behaviour. The enabling factors discussed in this study are the accessibility and availability of teaching and learning materials for teachers and children, skills, capabilities school rules and regulations, and norms as discussed in the Structuralism theory. Schools should be committed to WASH activities. This can be done by imbuing WASH activities in both the main and extra curricula activities, making WASH materials and facilities available to students and teachers. School authorities (including teachers) must make accessible to pupils' hygiene promoting facility and learning materials (resources) on safe WASH to give them more information on WASH. Pupils (agents) must also be governed by school rules and regulations (social structure) as well as the community norms (subjective norms) in the practice and maintenance of safe WASH. It is important that parents and community members schedule appropriate time to communicate with children either at the interpersonal or group level of communication. They must get appropriate means to access cost effective and user-friendly WASH facilities. Community leaders as well as health providers must give maximum support and motivation to all the actors to ensure that safe WASH is practiced to avoid social pressure from practicing the required behaviour.

Crucial to each stage of the framework is the channel of communication that must be employed by each actor in order to get the appropriate message or information disseminated. Communicating WASH information to families and peers can be through either interpersonal or group and community networks such as cultural events, and open days. How and

where information is disseminated from teachers to children, children to their family and peers is also very important. Effective communication with children therefore has to recognise their unique understanding of WASH which will vary with age. McLeod (2018) suggests that effective communication between parents and children should be based on solid knowledge and understanding of the child's age and maturity which is a starting point for any engagement that underpins participation. If school children are to benefit from WASH services, their health promoting messages must be delivered at an age-appropriate level because children at different ages require different approaches to communication (Chambers, 2007). It is also vital that school children are encouraged to explain things clearer to their families in order to avoid the major problem associated with the agency theory, which is information asymmetry. Over time, there are feedback loops which may be influenced by the channels through which the message is communicated as the BCC model offsets. This may lead to changes at each level of the framework and avoid the associated problems.

This conceptual framework links the child's knowledge centre or social environment (home or school) to some intervention measures crucial for school children to be motivated and convinced to practice and influence the WASH behaviours of their peers and families. As children become aware and concerned about the consequences of the behaviour, teachers help to develop their knowledge, attitudes, and skills needed to make appropriate decisions about their new situation on whether to perform the new behaviour or not (Postma, Getkate & van Wijk, 2004). As they perform the behaviour, they become confident because of the awareness of their abilities and capabilities.

Therefore, access to proper water, sanitation and hygiene learning material and facilities in schools is important for the learning and practising safe WASH behaviours. It is important that teachers are given adequate training on safe WASH behaviours to deliver appropriate WASH information to children who are expected to carry the information to families and community members. In this way the problem associated with the agency theory (information asymmetry) can be avoided.

It is worthwhile to note that the elements in the framework are mutual and interdependent, in that, a child's change in WASH behaviour practices can influence the collective behaviour of their families. A failure at one level will result in the failure of the entire framework.

The conceptual framework for this study, thus, portrays school children as the knowledgeable or competent actors (agents) through which all interactions on WASH behaviours between teachers (principals) and the parents and community (clients) evolve. The child is seen as a carrier of WASH messages from the teacher to families and families to the teacher once there is interpersonal trust and respect among all the actors (Aguilera & Jackpin, 2010).

Summary

This chapter has looked at both theoretical and conceptual views on children's role as agents of WASH behaviour change practices. The agency theory and the BCC model were chosen for this study because they were found to be better predictors of using school children as agents of change in WASH behaviour practices. The model that is developed for this study is based on the assumption that, children depending on their developmental age,

can disseminate WASH information and change the WASH behaviour practices of their parents, peers and community members. This happens if they are aware, have knowledge on proper WASH behaviours, are motivated, trusted and have access to user friendly WASH facilities and materials.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter provides a detailed description of how the study was conducted. It discusses the research design, study area, study population and how they were selected. It ends with a description of the instruments used for data collection and how data obtained were analysed to gain insights into the role of school children play in serving as agents of change in WASH behaviour practices in the Asikuma-Odoben-Brakwa District.

Research Design

This study employed the convergent parallel mixed methods design (Creswell & Clark, 2011). Thus, both quantitative and qualitative methods were used concurrently to obtain complementary data on the role of school children as agent of change in WASH behaviour practices. Moreover, convergent parallel design provided the opportunity for one approach to be used to explain the outcomes of the other approach.

The quantitative and qualitative datasets were obtained, the strands were kept independently during analysis and then the results were discussed along the research questions (Creswell & Clark, 2011). Interpretations were made to gain insights into the extent to which school children in (WASH and non-WASH schools) could serve as agents of WASH behaviour change.

The qualitative data helped in interpreting the results to triangulate the data gathered to ensure in-depth and detailed understanding of the role school children play as agents of change for WASH behaviour practices. Though both quantitative and qualitative techniques were employed, the emphasis was on

the qualitative strand. A schematic diagram of the convergent parallel mixed methods design, as employed in this study, is presented in Figure 6.

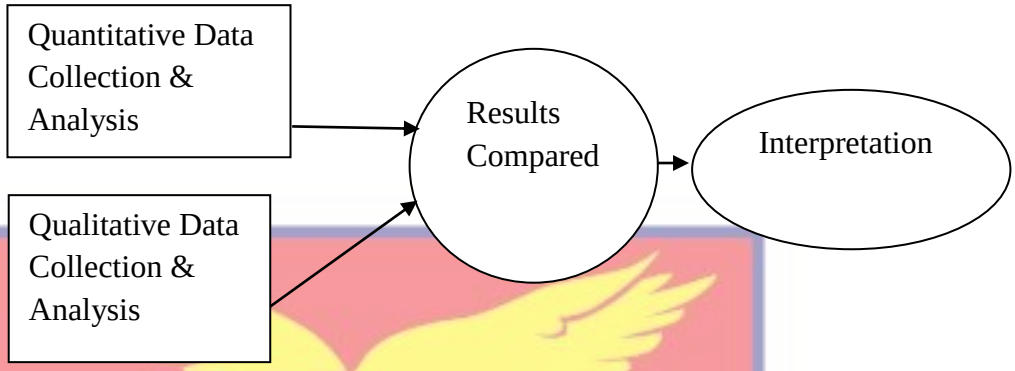


Figure 6: Convergent Parallel Mixed Methods Design
Source: Creswell and Clark (2011)

In spite of the obvious advantages of integrating quantitative and qualitative data by the use of the convergent methodologies, the two methodologies are based on different assumptions. This made the convergent parallel mixed methods research time-consuming, requiring extensive data collection and analysis, and such time requirements mostly require the researcher to participate in a research team when using it. This is a weakness in the use of this design.

It is generally accepted that one should not be narrowly selective in approach as no single design is best for all research contexts. Vulliamy, Stephens and Lewin (1990) have noted that the approaches to social research do not stem from fundamental philosophical commitments only, but also, are from other considerations such as the purpose of the research and the practicality of various strategies given the circumstances in which the inquiry is to be carried out. Although research into environmental and health issues has its own individual focus, it cannot detach itself from quantitative and qualitative methodological issues that social science research raises.

Various debates have been mounted on the merits and the incompatibility of the positivistic deductive approach and the non-positivistic (interpretative) inductive approach to social science research (Bryman, 1988, Cohen & Manion, 1994). The debate, however, reached its peak when Kuhn (1970) argued that positivism is not an accurate model for understanding knowledge processes even in the natural sciences. Those who argued for the "incompatibility" posit that quantitative methods belonged to one worldview (Objective knowledge) whereas qualitative methods apply to another worldview (subjective knowledge). The debate has led to a conclusion that mixed methods research is tenable because a single worldview does not exist for the inquiry.

Vulliamy, Lewin and Stephens (1990) distinguish among three schools of thought regarding research methodologies. The first school of thought perceives the interpretative approach as the accurate mode of studying human behaviour and totally disputes the combination of different methodologies within a research study. The second are those who posit that there is no fundamental difference between these methodologies and more conventional research designs such as surveys and experiments. The third are those who explicitly locate their stance in between the two extreme positions and make both empirical and pragmatic cases. According to this school of thought, since paradigm distinctions are real and useful, one can effectively mix methods without being limited or owing allegiance to one, but to categorise these paradigms as belonging to one worldview more than the other creates an unrealistic situation. Proponents of mixed method research, therefore, belong

to their own philosophical worldview which is the pragmatism paradigm (Fraenkel, Wallen & Hyun, 2012; Gray, 2009).

The Pragmatists hold the view that knowledge is constructed based on the realities of our experience in the world as well as being socially constructed (Gray, 2009). They posit that it is possible for a researcher to use many methods when understanding a research problem, collect both quantitative and qualitative data and to report the multiple worldviews he/she holds (Creswell, 2012; Tashakkori & Teddlie, 1998) in order to integrate multiple databases and to either validate or triangulate responses. This worldview is different from the positivists "who believe that knowledge is objective and outside the world of the researcher and also different from the interpretivists" who opine that knowledge is basically constructed. The pragmatic worldview takes a midway between the two extreme worldviews of quantitative and qualitative paradigms.

Pragmatists believe that the duty of the researcher is to use whatever works within the realms of academic rigor and appropriateness to conduct their research. This presupposes that the researcher should look out for methods that will help them answer their research question(s) rather than being dogmatic (Fraenkel et al., 2012; Gray, 2009). Therefore, a combination of different designs and methods can be used to balance the strengths and limitations of each other (Creswell, 2012). Hence, this study was generally informed by the pragmatic philosophical worldview for a detailed understanding of how school children act as agents of change in WASH behaviour practices.

The Study Area

The study was conducted in the Asikuma-Odoben-Brakwa (AOB) district, one of the twenty-two (22) administrative District Assemblies, located in the North-Central portion of the Central Region of Ghana. According to the 2010 Population census report, the district was carved out from the Ajumako-Enyan-Essiam district as a district Council in 1978. It covers an area of 884.84 square kilometres and it is found between latitude 50^0-51^0 and 50^0-52^0 North and longitude 10^0-50^0 and 10^0-5^0 West. The district borders on the north with Birim South District in the Eastern Region, on the south with Ajumako-Enyan-Essiam District, on the west with Assin South District and on the east with Agona East District (Ghana Statistical Service, 2014).

The population of Asikuma-Odoben-Brakwa District, according to the 2010 Population and Housing Census, is 112,706 representing 5.1% of the region's total population constituting 48.2% males and 51.8% females respectively. About 51.9% of the district's population lives in the rural areas. The district has 26,997 households and a household population of 111,094 with an average household size is 4 persons per household. There are 48.3% males and 51.7% females of the household population in the district. The male household population heads constitute 31.1% and 17.9% of the female household population.

The proportion of literate males (51.9%) is slightly higher than that of females (48.1%). The major occupation in the district is agriculture which employs 65 per cent of the labour force. Crop farming is the major Agriculture activities practiced in the district. The forest and savannah type of soils found in the district are suitable for the cultivation of a variety of cash crops

including cocoa, citrus, oil palm and staple food crops such as cassava, yam, cocoyam, maize, rice and vegetables. The district comprises three Fante-speaking groups namely Breman, Agona and Ekumfi. Other ethnic groups in the district are from Gomoa, Ajumako, Ewe and Assin.

The main sources of water in the district for drinking are borehole/pump/tube well, constituting 37.8% with 18.2% of households drinking from rivers and streams. About 52.8% of households in the district use the public toilet with 6.1% having no toilet facility and therefore resort to the bush/beach/field. Most households (82.6 %) in the district have their solid waste disposed of at the public dump. For liquid waste disposal, throwing waste onto compound (40.8%) and onto street /outside (35.7%) are the two most common methods used by households in the district.

The Central Region is considered the citadel of education. It is one of the three regions that has benefitted from SHEP activities since its inception in 1992 in Ghana. The AOB district was part of the first three districts that SHEP was first piloted at its inception in 1992 until it was rolled over to other districts in the country. The district has also been a beneficiary of WASH-related interventions such as the WASHSPLASH and WASH in Schools (WinS) and other support from donor agencies such as UNICEF, Global Community; International Development Agency (IDA) and CARGIL since 2010.

The reason for using the Asikuma-Odoben-Brakwa District was because the study needed to use a well-established SHEP District as a vehicle for evaluating the intervention. In this regard, the AOB District could serve as a strong base for the study because of its substantial benefit from WASH

activities compared to all other districts benefitting from SHEP and WASH activities in the Central Region (GES, 2012). Therefore, the advantages and disadvantages of issues relating to WASH have been observed in the district by key stakeholders. This makes the AOB District better placed than the other SHEP and WASH support Districts in the region in terms of informing policy as far as the issues under investigation are concerned. Figure 7 shows the map of the district.

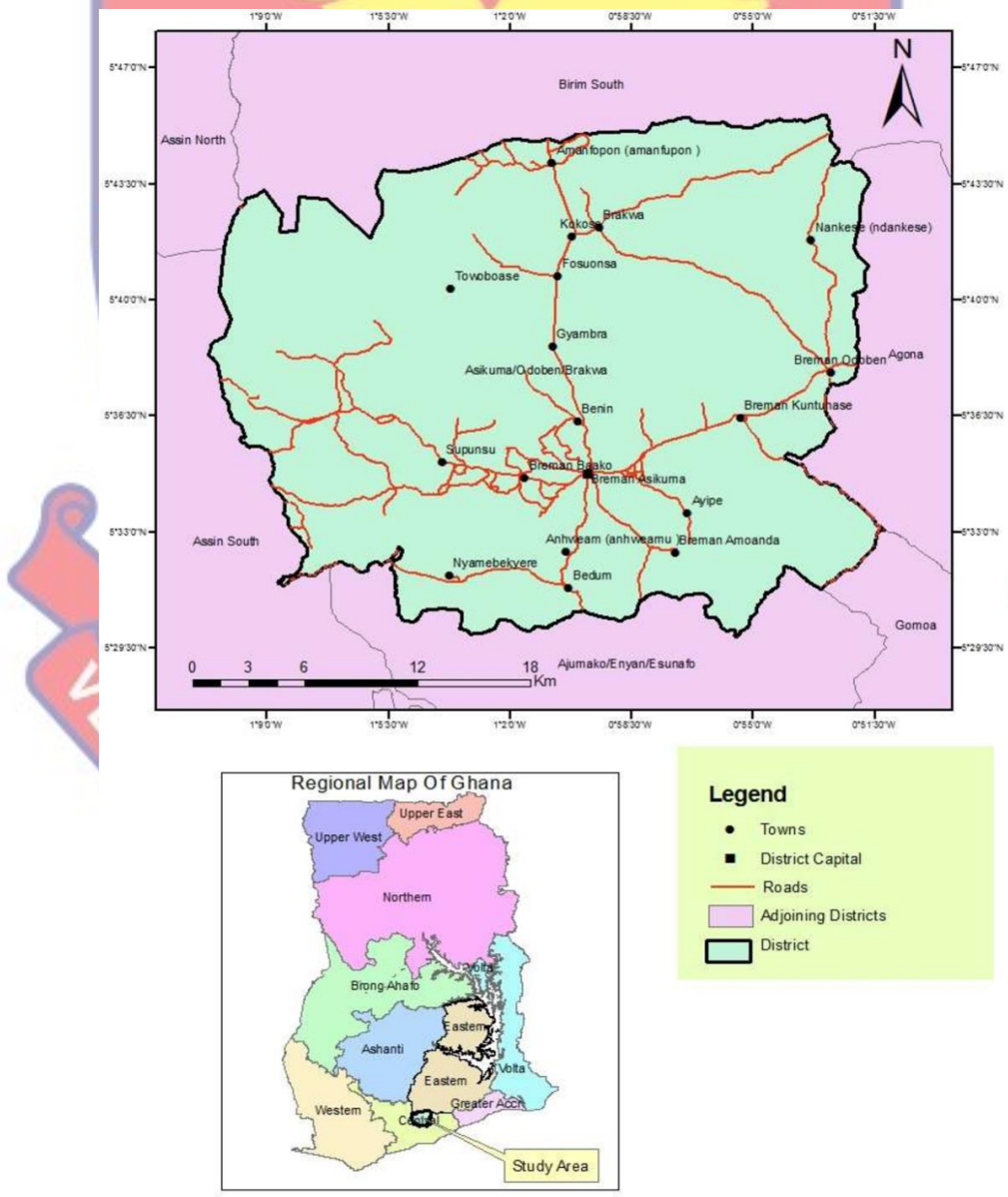


Figure 7: The map of Asikuma-Odoben-Brakwa District

Source: Ghana Statistical Service (2014)

The Study Population

All public basic schools (104) in the AOB District that are practising WASH activities were used for the study. Under the WASH programme, public schools are provided with both WASH hardware and software interventions. Hardware interventions are in the form of WASH technology such as toilet, drinking water and hand washing facilities; and hygiene promotion materials. The software interventions involve establishment of School Health Clubs; capacity building training on WASH for teachers, parents, and pupils who would act as health ambassadors in the dissemination of WASH information within and outside their school communities.

School children in Primary 5 and 6 from public schools, their teachers which include School-based Health Coordinators (SbHC), household heads of selected pupils, key informants such as Regional and District SHEP co-ordinators form the population. The decision to target pupils in Primary 5 and 6 was informed by theory. This is because pupils in these classes fall within the Concrete Operational stage of Piaget's theory of Cognitive Development. Piaget explained that children at this stage mostly demonstrate logical and concrete (inductive) reasoning; they are less egocentric and have an increasing awareness of external events (Piaget, 1970).

Khanal et al (2005) on their part placed class 5 and 6 pupils in the expansion stage of learning or the Middle and later primary school age. At that stage, pupils like to interact with each other based on what they have learned from personal experiences. They further observed that pupils, by their learning, consolidate, share, and expand their learning with others either within peer groups, with children of other age groups, with the teachers and

with parents and siblings at home and in school. In this regard, a child's thought processes become more mature and adult-like, therefore, they are able to undergo a transition of learning rules and showing the ability to view things from other people's perspective (Huitt & Hummel, 2003). Pupils in classes 5 and 6 are more matured and most senior at the primary school level. Such level of maturity helps them to start solving problems in a more logical fashion.

Critics, however, argued that most children at this stage can only solve problems that apply to concrete or specific events and experiences which may be a weakness in using children in primary school for this study (Benaroch, 2014; Scott & Marshall, 2009). Nevertheless, their ability to interact freely with others about what they have learnt makes them better placed as agents of change than other age groups. In this study, Primary 5 pupils were used for the FGDs and Primary 6 pupils were used for the interview guide. The reason to employ different instrument on each class is because pupils in class 6 were assumed to be more matured, have completed most of the syllabus in WASH issues in schools and therefore, their individual views on WASH is considered to be more important unlike class 5. Therefore, for class 5, the groups view was considered most appropriate.

Sampling Procedures

The study employed a multi-stage sampling technique to select pupils, teachers, School-based Health Co-ordinators, and household heads for the study. The Asikuma-Odoben-Brakwa District has been stratified by the Ghana Education Service into eight educational circuits (GES, 2010) with 104 Public Basic Schools. These 104 Public Basic Schools in the district were clustered

into WASH and non-WASH schools. For the purpose of this study, a WASH school is one that falls under SHEP with the following donor WASH interventions;

i. drinking water facilities,
ii. sanitation facilities (separate for boys, girls and teachers),
iii. hand washing facilities or mechanism to ensure there was water in the hand washing facilities,
iv. availability of hygiene promotion materials,
v. termly work plan for WASH activities
vi. capacity building programmes for teachers
vii. School Health Clubs
viii. School-based Health Co-ordinator

Out of the total number of public primary schools in the eight circuits, in the district, 30 schools benefitted from WASH intervention programmes while 74 did not [see Appendix B for the list of circuits, name of schools, sources and types of WASH intervention programme(s) the schools benefit].

Non-WASH schools on the other hand are those that come under SHEP but with no donor WASH intervention. Seventy-four schools with no donor WASH interventions were designated to non-WASH schools fell within all the eight educational circuits. These schools also served as the sample frame for the non-WASH category (see Appendix C).

Out of 30 schools that benefitted from donor WASH interventions, 17 met all the set criteria to be considered as full WASH schools. The 17 schools served as the sample frame for the WASH schools. These fell within the eight educational circuits. Each of the eight educational circuits had at least a

WASH and a non-WASH school. Out of the eight circuits, four circuits were selected using the Simple Random Sampling technique through the computer-generated random numbers. This was done to give each circuit an equal chance of being selected for the study. From each of the four selected circuits, a WASH school was randomly selected. In a situation where there were more than one WASH school in a circuit, one was selected through the simple random sampling technique. For a circuit which had only a WASH school, the school was conveniently selected for the study. Table four shows the list of circuits and the WASH schools selected for the study.

Table 4: List of sampled WASH and non-WASH schools in the district

Name of circuit	Name of school	Category
Asikuma 'A'	Kyirakaa D/A Pry	WASH
Kuntunase	Kwanan D/A Basic	WASH
Odoben	Odoben Amafua Basic	WASH
Jamra	Adandan D/A Basic	WASH
Asikuma 'B'	Amoanda D/A Basic	Non-WASH
Anhwiam	Sowotuom D/A Primary	Non-WASH
Brakwa	Ogonaso D/A Basic	Non-WASH
Kokoso	Nyamebekyere D/A Basic	Non-WASH

Source: Field Survey, Otami (2019)

The four circuits not selected for the WASH schools were conveniently used for the non-WASH schools to aid in better comparison of results since they were not located within the same area and thus, might not share similar characteristics. A non-WASH school was selected through the simple random sampling from each of these circuits. Where there were more than one non-WASH school, the simple random sampling technique was used to select one. In cases where there was only a non-WASH school in a circuit, it was

conveniently selected to be part of the study. In all eight schools were selected for the study.

The next stage was the selection of pupils for the study. First, 272 class 6 pupils comprising 126(46.3%) girls and 146(53.7%) boys from both WASH and non-WASH schools were used for the quantitative part of the study. 129 (47.4%) pupils out of the 272 pupils with a mean age of 10.8 years and a standard deviation of 0.8 from the WASH schools comprising 69(53.5%) girls and 60(46.5%) boys were used. The non-WASH schools had 143(52.6%) pupils comprising 66(46.2%) boys and 77(53.8%) girls out of the total 276 with a mean age of 11.4 years and a standard deviation of 1.1 were also selected take part in the quantitative part. Table 5 shows the name of circuit and schools as well as the total number of pupils in Primary 6 selected from the sampled schools.

Table 5: Number of Class 6 pupils used for the study

Circuit Name	Name of School	No. of pupils		Total	Status
		Boys	Girls		
Asikuma 'A'	Kyirakaa D/A Basic	22	12	34	WASH
Asikuma 'B'	Amoanda D/A Basic	23	17	40	Non-WASH
Jamra	Adandan D/A Basic	15	20	35	WASH
Anhwiam	Sowotuom D/A Basic	19	20	39	Non-WASH
Odoben	Odoben Amafua D/A Basic	11	23	34	WASH
Brakwa	Ogonaso D/A Basic	17	18	35	Non-WASH
Kuntunase	Kwanan D/A Basic	12	14	26	WASH
Kokoso	Nyamebekyere D/A Basic	7	22	29	Non-WASH
Total		126	146	272	

Source: Field Survey, (2019)

The next stage was the selection of pupils for the Focus Group Discussions (FGDs). In all 280 pupils from both WASH and non-WASH schools were purposively selected with the help of the classroom teachers in the selected based on the following criteria;

i. They were in Primary 5;

ii. They were considered to be interactive; and

iii. Willing to participate

Two FGDs were organised in each of the sampled schools, one for boys and one for girls. In all 16 FGDs were organised with a total of 280 pupils from the selected schools with a minimum of 16 and a maximum of 18 pupils in a group. This was as a result of some pupils joining the FGDs groups out of interests and their readiness to contribute to the WASH issues discussed. Table 6 shows the number of pupils selected for the FGDs.

Table 6: Number of Class 5 pupils used for the study

Name of circuit	Name of School	No. of pupils		Total	Status
		Boys	Girls		
Asikuma 'A'	Kyirakaa D/A Basic	17	18	35	WASH
Asikuma 'B'	Amoanda D/A Basic	18	17	35	Non-WASH
Jamra	Adandan D/A Basic	16	18	34	WASH
Anhwiam	Sowotuom D/A Primary	17	18	35	Non-WASH
Odoben	Odoben Amafua D/A Basic	18	17	35	WASH
Brakwa	Ogonaso D/A Basic	18	17	35	Non-WASH
Kuntunase	Kwanan D/A Basic	17	18	35	WASH
Kokoso	Nyamebekyere D/A Basic	18	18	36	Non-WASH
Total		139	141	280	

Source: Field Survey, (2019)

All teachers including School based Health Coordinators (SbHC) and heads in the eight sampled schools were selected for the study. In all 48 teachers were used for the study. The SbHC, District and the Regional SHEP co-ordinators were purposively selected for this study. The views of these groups were relevant because they helped in explaining and complementing further information on school children as agents in WASH behaviour change practices.

The selection of household respondents for the study employed the purposive sampling technique. The household respondents were those whose children were in Upper Primary 6 in the schools used for the study. The rationale was to assess how pupils disseminate WASH information learnt at school to their parents and peers at home. The selection of the household respondents focused on both male and female guardians of pupils. The requirements for the selection of a guardian were to:

i. be 18 years and above;

ii. be a household head and ;

iii. have stayed in the community for at least two years.

A household head is defined as a male or female member of the household recognised as such by all members of the household who has the social and economic responsibility for the household (GSS, 2014). One respondent per household was selected, however, in places where there were more than one respondent, the lottery method of the simple random sampling technique was used for each household head to have an equal chance of being selected for the study. The selection of male guardians was important because Bresee et al (2014) acknowledged in their study the key roles fathers play in

ensuring proper WASH practices in their homes, especially in the construction of latrines, an issue some researchers often overlooked in their studies. This therefore makes their views on learning WASH information from their children very crucial.

To locate the household heads of pupils, the class list was obtained from the school authorities. With the help of the teachers the various households were located. In all, 129(47.4%) household heads with children in WASH schools had a mean age of 42.2 years and a standard deviation of 13.1. Furthermore, 143(52.6%) household heads with pupils in on-WASH schools, had a mean age of 43.1 years and a standard deviation of 13.3 were used for the study.

Data Collection Instruments

The instruments developed for the study were:

1. Interview schedule for pupils on their knowledge of WASH behaviour practices;
2. Questionnaire for teachers' role in influencing pupils' WASH behaviour practices for 56 teachers;
3. Interview schedule for household heads on how WASH information is communicated to them;
4. Focus Group Discussions with pupils on WASH behaviour practices
5. Key Informant Interview Protocols on WASH behaviours;
6. Checklist on Personal Hygiene behaviours for pupils;
7. Checklist on Status of WASH facilities and materials

Since the research design for the study was a mixed method, the collection of primary data employed both quantitative and qualitative methods of data collection.

Quantitative methods

Interview schedule for pupils on their knowledge of WASH behaviour practices

To obtain information on pupils' knowledge and practices regarding WASH behaviours, how they communicate WASH information to family members and the challenges they face in doing so, a multidimensional questionnaire was developed (see Appendix D). The instrument had a mixture of both closed and opened-ended items and sections A to C. Section A contained items that required pupils to provide the demographic information about their sex, age, member of the school health club, guardian, highest educational level of guardian and occupation of guardian. Section B elicited information on pupils' knowledge on drinking water supply, sanitation and hygiene behaviour practices. The items contained in section B were developed based on extensive review of literature on the knowledge and skills needed for one to be adequately equipped with WASH information. Section C contained statements which sought information on how pupils communicate WASH information to family members and the challenges they face in doing so.

Questionnaire on teachers' role in influencing pupils' WASH behaviour practices

The survey on teachers' role in influencing pupils' WASH behaviour practices was developed to elicit information on the role teachers play to ensure that pupils observe good WASH behaviour change practices (Appendix

E). The 12-itemed questions solicited their views on their knowledge on WASH; the training they had acquired; as well as the methods used in teaching the pupils about WASH behaviours. The instrument further sought their views on how they communicate WASH information to pupils to ensure that pupils practice what they learned in school.

Interview schedule for household heads on how WASH is communicated to them

The Questionnaire for household on how WASH is communicated to them was in two sections A and B. Section A contained items on the demographic information on household heads about their sex, age, occupation, whether they are the primary household earner, as well as their highest educational level. Section B contained 20 items which elicited information on how children communicate WASH information to them, the actions they (guardians) take and how they had adopted the WASH information communicated to them by their children from school as well as the perceived changes and difficulties in adopting these behaviour practices (Appendix F).

Qualitative methods

The qualitative data collection method employed for the study included the following:

Key Informant Interview Protocols on WASH behaviours

Interview guide was developed to collect information on how school children could be used as agents in communicating WASH information to peers and parents in their communities (see Appendix G). District and Regional SHEP Co-ordinators, as well as the eight School based Health Coordinators in the selected schools were interviewed to further solicit their

views on the factors influencing children in their roles as agents and in encouraging children to become communicators of WASH behaviour change practices. The interview was conducted in English.

Focus Group Discussions for pupils on WASH behaviour practices

Instruments for Focus Group Discussions were developed to systematically and simultaneously question pupils' knowledge of WASH behaviours; hygiene behaviours and practices such as hand washing and personal hygiene in school and at home; hygienic norms that are practiced at home, as well as the challenges faced in communicating WASH-related information to their peers, families and community members (see Appendix H). The items for the FGDs emanated from the questionnaire for pupils on their knowledge and practices of WASH behaviours. Pupils were also shown a WASH-related picture on the potential health risks associated with drinking untreated water, open defecation, not washing hands after defecation, and refusing to observe personal hygiene. (Figure 18). The FGDs solicited responses from boys and girls in Primary 5.

Checklist on personal hygiene behaviours of pupils

The hygiene enabling facilities in schools and at home were assessed through a structured observation checklist on personal hygiene behaviours for pupils (Appendix I). Personal hygiene indicators were developed to find out whether children were observing good personal hygiene. The 17-itemed checklist observed and recorded parameters under hygiene of nails, hair, body and clothing. The nails and hair were checked whether they were short and cleaned or dirty. The body was also observed for cleanliness, wounds and skin infections like scabies. Pupils' clothing was inspected to see whether they

were dirty or clean. School and home-based observation guide was developed to gather information on school and home routines on drinking water supply, sanitation and hygiene practices. This was to assess the safe WASH practices of pupils' behaviours.

Checklist on Status of WASH facilities and materials

A checklist was developed to solicit information on the presence and state of drinking water supply, latrines, and hand-washing facilities and learning materials at school (see Appendix J).

Pre-testing of instruments

The tool used to collect the data mostly helped to check its own validity. The validity of the instruments was checked. First, the instruments were given to the Regional SHEP co-ordinator and my team of supervisors to review and to ascertain whether the items were really measuring WASH behaviour issues and to check if the translations, the research instrument and the time available to pupils and household heads were adequate. The SHEP co-ordinator's opinion was sought as he interacts more often with the District SHEP and SbHC on a regular basis and was in a good position to provide advice on what they are doing in their schools with regards to WASH. My supervisors are experienced and have been researching mainly into WASH issues.

To ensure construct validity, pupils with similar characteristics as the respondents were asked to respond to the items (Smith & Mackie, 2000). In view of this, the questionnaires for the study were pre-tested in some selected primary schools in the Ajumako-Enyan-Essiam (AEE) District. The Ajumako-Enyan-Essiam District was selected because it has similar characteristics with

the research area. The district is also one of the UNICEF WASH supported districts, although it might not have enjoyed most of the WASH interventions compared to the study area. Abaasa D/A Basic School (a WASH school) and GESDI 'A' D/A Basic (a non-WASH school) were used for the pre-test.

Primaries 5 and 6 pupils, all teachers and the SbHCs were used for the study. Fifty-three guardians whose children were in the classes were interviewed as well. Based on the feedback from the pre-test, some issues came up that needed to be looked into. With the help of my supervisors, the study tools were modified to suit the objectives of the study. As much as possible inconsistencies and biases were eliminated.

The pre-test helped in the modification of some of the items for easier and better responses. The Regional and District SHEP co-ordinators as well as the teachers from the selected primary schools for the pre-test in the AEE District were asked to validate the content of the instrument. They were given the items and the identified headings. They were further asked to group the items according to the headings indicated and to assess the quality of each item in the context of clarity, ambiguity, generality and to ensure they were really measuring WASH behaviours. The district SHEP was first requested to work individually and later met with me to resolve all discrepancies in their evaluation of the items. Their suggestions led to modifications, deletions and additions of some items. Items that were not clear in meaning were deleted. Items they thought were necessary but were not included were added to the instrument. Having experts review the instrument as urged by Archambault and Crippen (2009), was to ensure that items were complete, relevant and

arranged in appropriate format which would yield a high level of content validity.

Data Collection Procedures

All head teachers of the selected schools were informed of the data collection exercise in their schools after an approval was secured for the exercise. The questionnaires were self-administered by the teachers while the Research Assistants administered it for the pupils. This was done because, while the teachers would be able to read, understand and give the needed responses to the issues, it was not the same for the pupils.

Two FGDs were conducted in each school, one for boys and one for girls. Each FGD comprised 10-12 pupils from the school. In all 16 FGDs were organised. A digital recording device was used to ensure that all that transpired was recorded. The FGDs was moderated by one of the field assistants who was trained by the researcher prior to the start of the discussions. The officer was taken through the FGD guide after which a mock FGD was organised for them to witness the proceedings. The researcher recorded the proceedings and helped to control the dynamics within the group so the other subjects had an equal chance to participate to help generate "group conformity" (Babbie, 2005). The FGDs were held in the native language (Fante) and pupils expressed themselves better. Each FGD lasted for 30 minutes. In order not to disrupt the day's lesson, the last period on Fridays where it was allocated for extra-curricular activities were used. Responses from the FGDs were later transcribed and translated into English language in the analyses. Photographs were also taken at different areas throughout the

field site. In all cases, the informed consent of the respondents was sought using the informed consent forms before data was gathered from respondents.

Data Processing and Analysis

After the fieldwork, the raw data gathered on the completed and retrieved instruments were scrutinised. Data gathered were cleaned to remove and eliminate errors, omissions, incompleteness and general gaps before being analysed. Transcriptions of the interviews were edited for grammatical errors and mistakes in construction of sentences before analysis. The refined data was coded and imputed into the computer software, Statistical Product for Service Solutions (SPSS) (Version 21) which has facilities for analysing descriptive statistics as well as performing cross tabulations. Frequencies and percentages were used to examine the demographic characteristics of pupils and parents.

The first objective which sought to examine the WASH behaviour activities in the Upper Primary School curriculum employed thematic analysis. The various action plans WASH adopted by the schools, facilities available, teaching and learning materials as well as co-curricular activities employed were thematically analysed. The second objective sought to assess pupil's knowledge about WASH behaviours in school. The test for comparing two independent proportions was employed to determine if the two independent proportions (WASH and non-WASH pupils) are significantly different or similar in the assessment of their knowledge of the various components of WASH. Objective three, sought to examine the existing hygienic cultural norms and practices of school children at home. The thematic analysis was

employed to analyse the safe and unsafe WASH behaviour practices by respondents.

The fourth objective which examined the role teachers play to influence school children to become communicators of WASH messages and behaviour change practices employed a thematic analysis. Objective five which sought to employ the means school children communicate WASH information learned from school to parents and peers also employed the thematic analysis.

The data from observation checklists conducted at school and home were categorised and analysed in the form of indicators such as good grooming and hand washing. School observations were grouped based on the responses from pupils. Data from the interviews and the FGDs were transcribed and translated to summarise themes that were developed from the questionnaire, interview guide and observation data. The responses from these interviews were analysed narratively to give meanings and evaluate within their contexts (Wiles, Rosenberg, & Kearns, 2005). Information gathered from participants through the interviews were further arranged in categories or themes and analysed thematically as suggested by Riessman (2008).

Ethical Considerations

Given that this study involved school children, their teachers and families, several ethical considerations were observed especially at the data collection stage. Participation in the study was voluntary. However, pupils were given some refreshment after the sessions. Respondents were assured of confidentiality of the data and information they provided for the study. Respondents were further assured that the data was purposely and strictly for

academic purposes to inform the issue of using school children as agents of WASH behaviour change practices.

The nature of the research design required mutual respect, the development of productive relationships, and the establishment of a cooperative environment between the researcher, participating pupils, teachers, parents and other key officials [see appendices K, L, M, & N]. Therefore, there was the need to satisfy all ethical appropriateness requirements of the study. Permission was sought from the Regional and District Directors of Education Offices.

After the initial contact meetings, letters explaining the purpose of this study were sent to all school headteachers, teachers, pupils and household heads outlining the study and establishing agreement to be part of the study. Letters were sent to the parents of the selected school children to inform them of the purpose of the study and to ask their permission for their children to be involved. Oral informed consent was obtained from all participants and personal identifiers were permanently removed from the database. After explaining to the pupils, the nature of the research, respondents were asked to give their consent to either participate in the study or not. The consent of each pupil was sought before the interview or discussion commenced through an informed consent form. At all times, the researcher was careful to accommodate changes to the scheduling of the interviews. Therefore, the study activities did not interfere with core curriculum activities of pupils involved. All information on the recording devices was cleared after the study.

Field Work

The field work started with training of four field assistants who helped in the administration and collection of the instrument. Interviews were solely conducted by the researcher. Field data collection was eight weeks and it started from 16th January and ended on 30th March, 2019. First a letter of introduction was sent personally to the District Director of Education for approval of the study in the selected Districts. Several trips were later made to the Asikuma-Odoben-Brakwa District for familiarisation with some teachers, and SbHC and Circuit supervisors of the selected circuits. The reason for the study was explained to them and their voluntary participation was sought. They were assured of confidentiality and anonymity of their responses.

Summary

This chapter examined the selection of appropriate methodological design for the study. This was informed by the research questions and the aim of the research. The aim of the research was to gather enough data in order to examine how school children can be agents of WASH behaviour change practices in the Asikuma-Odoben-Brakwa District. The aim of the research fits into the pragmatists‟ worldview of knowledge being socially and independently constructed (Gray, 2009). Therefore, the pragmatists‟ design of mixed methods approach which comprised quantitative and qualitative aspects was used for the study. The quantitative aspect of the study was achieved through a survey for teachers, pupils and household heads. The qualitative aspect was achieved through FGDs with pupils; key informant interviews, and direct observation. The data generated from the quantitative analysis were analysed to find the differences in the knowledge on WASH from pupils in

WASH and non-WASH schools using the test for comparing two independent proportions whereas the qualitative analysis mainly employed thematic analysis.

CHAPTER FOUR

EXAMINATION OF WASH ACTIVITIES IN SCHOOLS

Introduction

The chapter provides a presentation and discussion of the findings of the study. It covers a detailed description of the background characteristics of pupils and their household head; an examination of WASH activities in schools; the availability and status of WASH facilities as well as the availability of teaching and learning materials on WASH.

Demographic Characteristics of Pupils

The demographic characteristics of pupils such as sex; age; ethnicity; guardian; occupation of guardian; number of children in their households as well as being a member of the School Health Club selected to participate in the study are presented.

Age Distribution of Pupils

The total number of pupils for the WASH schools was 129, with the youngest being 9 years and the oldest being 14 years. The mean age of the WASH pupils was 10.8 years with a standard deviation of 0.8. For the non-WASH schools, the total number of pupils was 143, with the youngest being 10 years and the oldest being 14 years. The mean age of the non-WASH pupils was 11.4 years with a standard deviation of 1.1.

Comparing the mean ages of the WASH (M=10.8; SD=0.8; skewness = 0.77), and the non-WASH school (M=11.4; SD=1.1; skewness = 0.92), it could be observed that pupils in Primary 6 in WASH and non-WASH schools in Asikuma-Odoben-Brakwa did not show much variation in terms of age. The average ages of pupils in both school types conform to the national standard

for progression in school for Primary 6. Table 7 shows the various age distributions.

Table 7: Age Distribution of Pupils in WASH and non-WASH

Age of Pupils	School type					
	WASH (N=129)		Non-WASH (N=143)		Total (N=272)	
	Freq.	%	Freq.	%	Freq.	%
9	3	2.3	0	0.0	3	1.1
10	37	28.7	25	17.5	62	22.8
11	73	56.6	71	49.6	144	52.9
12	11	8.7	24	16.8	35	12.9
13	4	3.1	13	9.1	17	6.3
14	1	0.8	10	7.0	11	4.0

WASH: M=10.8 SD=0.8; Non-WASH: M=11.4 SD=1.1; All: M=11.3 SD=1.0

Source: Field survey, Otami (2019)

Table 7 further shows that only 52.9% of pupils were within the Net Enrolment Rate (NER) of age 11 years with 23.9% below and 23.2% above. The enrolment of pupils above the appropriate age group for Primary 6 (11 years) is consistent with a USAID (2017) survey report which indicated that in Ghana many children attending primary schools in the rural areas are outside the official age range.

Membership of School Health Club

A total of 106(82.2%) out of 129 pupils in WASH schools were members of School Health Club while in the non-WASH schools as many as 131(91.6%) were not. The low membership of pupils in non-WASH schools

seem to suggest that the school authorities do not pay attention to SHEP activities though it is mandatory for every Primary school in Ghana to belong to a health club. Considering the additional knowledge and skill training given on WASH practices to members of the clubs, the low membership of pupils in the non-WASH schools as club members could hinder their effectiveness in acting as agents of change in WASH. Table 8 presents the results.

Table 8: Membership of School Health Club

Type of school	Member of WASH Club					
	WASH (N=129)		Non-WASH (N=143)		Total (N=272)	
	Freq.	%	Freq.	%	Freq.	%
Member	106	82.2	12	8.4	118	43.4
Not a Member	23	17.8	131	91.6	154	56.6
Total	129	100.0	143	100.0	272	100.0

Source: Field survey Otami (2019)

Household head of pupils

It was important to consider household heads of pupils in order to establish whether WASH information was communicated to them. Pupils were asked to indicate whom they stayed with. A total of 127 (46.7%) lived with both parents; 48(17.6%) lived with their mothers only; 14(5.2%) with their fathers only and the rest, 83(30.5%) lived with their grandparents. A high percentage of pupils staying with both parents might suggest that pupils might get support and be able to interact with each other fluidly on WASH behaviour practices. Table 9 indicates the results.

Table 9: Household head of Pupils from WASH and non-WASH schools

Household head of pupils	School type					
	WASH (N= 129)		Non-WASH (N=143)		Total (N=272)	
	Freq.	%	Freq.	%	Freq.	%
Both parents	65	50.4	62	43.4	127	46.7
Father	7	5.4	7	4.8	14	5.2
Mother	36	27.9	12	8.4	48	17.6
Grandparents	21	16.3	62	43.4	83	30.5

Source: Field survey, Otami (2019)

Demographic characteristics of household heads of pupils from WASH and non-WASH schools

The total number of household heads that was used for the study was 129 for the WASH group comprising 34(26.4%) males and 95(73.6%) females; and the non-WASH group which was 143 also comprised 29(20.3%) males and 114(79.7%) females. The Asikuma-Odoben-Brakwa is predominantly matrilineal in social organisation (GSS, 2014) and this broadly reflects in the sex distribution of the household heads.

Age Distribution of household heads of pupils from WASH and non-WASH schools

The age distribution of household respondents indicated a mean age of 42.7 years with a standard deviation of 13.1, (skewness = 0.493). This means that household respondents were relatively middle-aged. The minimum age group of a household head interviewed was 26 years and a maximum age of 85 years. Comparing the mean ages of household heads of pupils from WASH (M=42.2; SD=13.1) and those from non-WASH (M=43.1; SD=13.2)

households, in Asikuma-Odoben-Brakwa District, the results did not show much variation. The result is presented in Table 10.

Table 10: Age Distribution of household heads of pupils from WASH and non-WASH schools

Age of Household heads	School type: WASH (N=129) Freq.	%	Non-WASH (N=143) Freq.	%	Total (N=272) Freq.	%
≤ 30	17	13.2	20	13.9	37	13.6
31-40	32	24.8	44	30.8	76	27.9
41-50	39	30.2	36	25.2	75	27.6
51-60	30	23.2	27	18.9	57	20.9
61-70	8	6.2	14	9.8	22	8.1
71-80	2	1.6	2	1.4	4	1.5
81-90	1	0.8	0	0.0	1	0.4

WASH (M=42.2; SD=13.1) Non-WASH (M=43.1; SD=13.2) All (M=42.7; SD=13.1)

Source: Field survey, Otami (2019)

Educational background of household heads of pupils from WASH and non-WASH schools

The educational background of respondents as presented in Table 11 indicates a higher number of household heads having some form of formal education. The results show that households of pupils from both school types had a higher number of respondents with the highest educational qualification as the Basic Education Certificate for WASH, 97(75.2%) and non-WASH 105(73.4%).

Table 11: Educational background of household heads of pupils from WASH and non-WASH schools

	School type					
Level of	WASH (N=129)		Non-WASH (N=143)		Total (N=272)	
Education	Freq.	%	Freq.	%	Freq.	%
Primary	97	75.2	105	73.4	202	74.3
Secondary	9	7.0	8	5.6	17	6.3
Tertiary	4	3.1	1	0.7	5	1.8
None	19	14.7	29	20.3	48	17.6

Source: Field survey, Otami (2019)

This finding resonates with observations by Kar and Chambers (2008) who reported that household heads with some level of schooling were likely to appreciate the relevance of hygiene. They further noted that since household heads were educated, they could be convinced with rational arguments, have social networks that support change and some effrontery to try the new practices before accepting or rejecting.

The analysis further looked at the educational background of household heads of pupils from WASH and non-WASH schools by sex. From Table 12, out of the total number of household heads of pupils from WASH schools with some formal education, 77(81.1%) were females with basic education, 18 (18.9%) had no education, with none having secondary nor tertiary education. Furthermore 20(58.8%) of them were males with basic education, 9(26.5%) with secondary, 4(11.8%) with tertiary and 1(2.9%) having no formal education.

Table 12: Educational background of household heads of pupils from WASH Schools by Sex

	WASH Schools					
Level of	Female (N=95)		Male (N=34)		Total (N=129)	
Education	Freq.	%	Freq.	%	Freq.	%
Primary	77	81.1	20	58.8	97	75.2
Secondary	0	0.0	9	26.5	9	7.0
Tertiary	0	0.0	4	11.8	4	3.1
None	18	18.9	1	2.9	19	14.7

Source: Field survey, Otami (2019)

Table 13 shows that out of the total number of house hold heads of pupils from non-WASH schools 88(77.2%) were females who had basic education, 26(22.8%) with no education, and none for secondary and tertiary education. On the part of the males 17(58.6%) had basic education, 8(27.6%) with secondary, 3(10.3%) tertiary and only 1(3.5%) with no formal education.

Table 13: Educational background of household heads of pupils from non-WASH schools by sex

	Non-WASH Schools					
Level of	Female (N=114)		Male (N=29)		Total (N=143)	
Education	Freq.	%	Freq.	%	Freq.	%
Primary	88	77.2	17	58.6	105	73.4
Secondary	0	0.0	8	27.6	8	5.6
Tertiary	0	0.0	3	10.3	3	2.1
None	26	22.8	1	3.5	27	18.9

Source: Field survey, Otami (2019)

The results suggest that male household heads of pupils from both school categories were comparatively better educated than the females. This could affect good WASH behaviour practices in the households as Kendie (2002) noted that better educated women internalise health messages, and practice better hygiene behaviours which reduce diarrhoea, and other hygiene related diseases. This paralleled the situation in Asikuma-Odoben-Brakwa District where the proportion of educated males (51.9%) is slightly higher than that of females (48.1%) (GSS, 2014).

Occupation of household heads of pupils from WASH and non-WASH schools

Five major occupations predominant in the study area were; farming, trading, artisanship, health worker and driving. Majority 203(74.6%) of household heads of pupils from both school-types were farmers. Out of the total number, 98(76.0%) were from WASH schools whereas 105(73.4%) were from non-WASH schools. However, one person from the non-WASH school was a health worker. Results from Table 4 suggest that the area is largely agrarian.

Table 14: Occupation of household heads of pupils from both school-types

Occupation of household heads	School type					
	WASH (N=129)		Non-WASH (N=143)		Total (N=272)	
	Freq.	%	Freq.	%	Freq.	%
Farming	98	76.0	105	73.4	203	74.3
Trading	27	20.9	34	23.8	61	22.4
Health worker	0	0.0	1	0.7	1	0.4
Driving	1	0.8	1	0.7	2	0.8
Artisan	3	2.3	2	1.4	5	1.8

Source: Field survey, Otami (2019)

The high number of people involved in agriculture mirrors that of the district which is indicated as an agrarian economy (GSS, 2014). According to the respondents, crops cultivated were mainly cassava, maize and plantain with the major cash crop being cocoa. The highest number of guardians being farmers supports the assertion by Brown (1996) that the stock in trade for many people in rural Ghana is farming. Few non-agriculture workers were found among the household heads used for the study.

Size of households of pupils from WASH and non-WASH schools

It was important to find the size of households from which the pupils belong. The largest cohort with less than five persons in a household was 199 (73.2%) with least cohort 5(1.8%) having between 11 to 15 persons. This is shown in Table 15.

Table 15: Size of household of pupils from both school-types

	School type					
Number	WASH (N=129)		Non-WASH (N=143)		Total (N=272)	
of persons	Freq	%	Freq.	%	Freq.	%
≤ 5	94	72.9	105	73.4	199	73.2
6-10	31	24.0	37	25.9	68	25.0
11-15	4	3.1	1	0.7	5	1.8

Source: Field survey, Otami (2019)

Major earner of household of pupils from WASH and non-WASH schools

Awareness of the main household earner is very critical. This is because major household decisions, such as constructing of toilet facility, were the responsibility of mostly the major household earner. To find out if the

household heads were the main earners, 240(88.2%) of household heads of pupils from both school-types responded in the affirmative while only 32(11.8%) indicated that they were not as shown in Table 16.

Table 16: Major earner of households of pupils from both school-types

	Type of school					
Major house-	WASH (N=129)		Non WASH (N=143)		Total (N=272)	
hold earner	Freq.	%	Freq.	%	Freq.	%
Yes	126	95.3	117	81.8	240	88.2
No	6	4.7	26	18.2	32	11. 8
Total	132	100.0	143	100.0	272	100.0

Source: Field survey, Otami (2019)

Water supply, Sanitation and Hygiene Behaviour Activities in the Basic School Curriculum

Williams and Leherr (1998) observed that in Ghana school health has mainly been in the form of hygiene education, and has traditionally been an important component of schooling in the country since 1970. During that time, hygiene was taught as an examinable subject in schools. Towns and villages were inspected to keep up high standards of cleanliness in their environment. However, the late 1970s witnessed a removal in hygiene education from the schools' timetable as a separate subject, as a result of reforms carried out in 1974.

According to Tamale School of Hygiene Resource Group (2005), the Town Council Health Inspectors, known as "tankas" or "samansaman" now the Environmental Health Department, who were responsible for household and community hygiene became ineffective after they were transferred from

the Ministry of Health (MoH) to the Ministry of Local Government and Rural Development (MLGRD). This is because their roles have not been fully recognised by the Assemblies and, therefore, have not given them necessary resources to work. The disinterests in health issues in schools and in the communities then resulted in a considerable deterioration of hygienic conditions particularly in schools and the communities at large.

The first research question sought to examine the various facets of WASH behaviour activities in the primary school curriculum. Other extra curriculum activities were also considered. The study considered the following activities: the action plan on WASH; other extra curriculum activities introduced to promote WASH behaviour practices; as well as the various WASH materials available to compliment WASH facilities provided to ensure that pupils were equipped with adequate knowledge, skills, and values to empower them to act as agents of WASH behaviour practices in their homes and communities.

Information obtained from 48 teachers who responded to the questionnaire indicated that the curriculum provided information on WASH activities such as ways to keep one's environment clean, proper grooming, proper ways to wash hands, and proper ways to treat drinking water. This result is consistent with Muzaki's (2011) observation that pupils have regular access to information on WASH behaviour practices in schools. The teachers, however, clarified that the various themes on WASH in the curriculum were not integrated and did not follow a consistent pattern. For instance, while personal hygiene is taught in Primary Classes 1; 3; and 4 under Interactions of Matter; water supply is taught in Primary Classes 2 and 3 under Diversity of

Matter and Interactions of Matter, sanitation is taught in Primary Class 2 as a sub-topic under Diversity of Matter. Water borne and water related diseases are taught in Primary Classes 5 and 6 under Interactions of Matter and Cycles respectively.

However, all the teachers from WASH schools were of the opinion that relying solely on the information in the main curriculum would not adequately equip pupils to acquire the necessary knowledge and skills for them to act as agents of WASH behaviour change practices. In Kyirakaa D/A Primary School for instance, the School-based Health Co-ordinator (SbHC) pointed out that teachers integrated WASH related activities in the preparation of their lesson notes as well as their everyday classroom teaching for each subject by introducing a topic in WASH for discussion or brainstorming before their normal teaching. Other teachers also introduced songs on proper WASH practices before their teaching. An example of such songs is:

"wash, wash, wash your hands with soap and water always

If you wash your hands always you will not get sick"

When asked why teachers integrate WASH issues in their lessons, the Co-ordinator further explained that,

> once the school has adopted an action plan on WASH the best way to teach pupils and instil the values and skills on WASH in them is to remind them constantly in class and discuss such issues in every lesson taught. By this, pupils tend to treat the WASH issues discussed as very important and make them part of their lifestyle. (SbHC Coordinator,

Such action taken by the school authorities, Bresee et al (2014) argued, was one very important method teachers could employ to make pupils know how they could influence their families to adopt good WASH behaviour practices. Therefore, most schools had designed other extra-curricular activities to help in this direction.

The study further sought to investigate other extra-curricular activities introduced by the schools for children to practice good hygiene and sanitation for healthy living in the study area beside what was in the main syllabi that teachers were using. The study first examined whether the selected schools had developed an action plan on WASH activities; whether there were various activities schools undertook to ensure proper WASH behaviour practices; and whether there were available WASH facilities and learning materials for use. The results are discussed in the subsequent sections.

Extra-curricular Activities on WASH in both School-types

Extracurricular activities are considered activities that do not fall within the scope of a regular curriculum in a school. Teachers were asked to indicate extra-curricular activities that each of the schools had put in place to ensure pupils received adequate knowledge and skills to perform their roles as agents of change. One area, teachers reported, was constant monitoring of pupils' WASH behaviours to ensure they practice what is taught in the classrooms. The teachers revealed that they conducted a weekly hygiene inspection on pupils to check whether they have observed good personal hygiene practices. Teachers inspected pupils' teeth; hair; skin; fingernails; and school uniform. The teachers further reported that, these inspections were

carried out in the schools mostly during morning assembly on Mondays or Wednesdays.

Beside the inspection conducted during morning assembly, the results show pupils were taught through demonstration how to ensure good personal hygiene such as skills in hand washing with soap during morning worship. According to the SbHC at Adandan, one School Health Club (SHC) member was selected to demonstrate how to keep good personal hygiene. Asked why they do that the Co-ordinator explained;

> having a student to demonstrate to his or her fellow students will make them understand the issue better and know that maintaining good personal hygiene isn't difficult after all.

According to the co-ordinator, such an act also boosts the self-confidence of pupils, so they could speak boldly and correct parents who go wrong in an attempt to put into practice proper WASH behaviours. In Kyirakaa, a teacher indicated that either the Head teacher or whoever conducts the morning assembly briefly discuss some aspects of WASH which may be taught in the various classes during the week to the entire school community. Cleaning of school compound by pupils was also inspected by teachers to ensure proper sanitation.

Schools' action plan on water supply, sanitation and hygiene behaviours

The study examined if schools had action plans on water supply, sanitation and hygiene behaviour practices. The development of an action plan on WASH was seen as crucial because it served as a framework for which schools were made to commit to ensuring WASH plays a vital role in the curriculum of the school. According to the District SHEP Co-ordinator,

WASH schools were taken through the Facility Management Plan (FMP). The FMP helped the schools to develop their action plans for WASH activities. Facility Management Plan, which involves inputs from all stakeholders of the schools, spells out the mode of maintenance of WASH facilities; sources of revenue for facility maintenance; quantity of materials used for maintenance and persons responsible for the maintenance.

School-based Health Co-ordinators were asked whether their schools had action plans on WASH. The non-WASH schools had no action plan on WASH although the Co-ordinators in the schools admitted having one a one way of ensuring schools were committed to proper WASH behaviour practices. The reasons given for not having were that the schools were only following the GES guidance on WASH. For the WASH schools, the Co-ordinators responded in the affirmative. For instance, in Adandan D/A Basic, the Co-ordinator reported that their action plan on WASH was to ensure proper maintenance of WASH facilities. An indication of the presence of action plans in the schools on WASH is presented in Table 17.

Table 17: Availability of Action plan on WASH in both School-types

School	Action Plan on WASH	Kind of Action Plan
Adandan	Yes	Maintenance of WASH facilities
Kyirakaa	Yes	Rigorous hand washing practice by all
Kwanan	Yes	Maintaining healthy environment (Yet to be accepted by staff)
Odoben Amafua	Yes	Observance of regular handwashing and clean school environment
Nyamebekyere	No	following GES guidance on WASH
Amoanda	No	following GES guidance on WASH
Sowutuom	No	following GES guidance on WASH
Ogonaso	No	following GES guidance on WASH

Source: Field survey, Otami (2019)

The action plan for Odoben Amafua D/A Catholic Basic School was the practice of rigorous hand washing while in Kyirakaa D/A Primary School it was total cleanliness. However, the Co-ordinator for Kwanan D/A Basic indicated that the school was yet to practice fully their proposed action plan on WASH because the School Health Club was yet to be operational.

In Adandan D/A Basic, the SbHC explained that the action plan on WASH was to ensure proper maintenance of WASH facilities. Ensuring proper maintenance meant monitoring of all WASH facilities to ensure they functioned properly; were clean; and user friendly. The Co-ordinator explained that once the facility was properly maintained, pupils were not only encouraged to make optimal use of it, but also, to ensure the proper maintenance of the facility. Making optimal use of the project and ensuring its proper maintenance showed that pupils in Adandan were fully participating in WASH activities. Such level of genuine participation was not only a recipe to an efficient, effective and sustainable programme, but also, empowers them to act as agents of WASH behaviour change in school and at home.

It was further observed in Adandan D/A Basic that the school had a well-maintained WASH facility, a clean school compound, and adequate water supply for drinking and for hand washing. The presence of sanitation facilities such as waste bins, separate toilets and urinals for boys and girls, as well as for teachers in the school may have also accounted for the clean sanitary environment. During the FGD, pupils noted with a sense of pride their keeping the environment around their school clean. The group expressed that clean environment always served as a motivation to them to attend school

regularly because one does not worry about where to ease him/herself or get water to drink.

With the availability of hand washing facilities, such as hand washing containers, soap and water, most pupils were seen practicing hand washing before eating, after visiting the toilet or the urinals and also after playing. These practices by the pupils in Adandan D/A Basic indicated clearly that they have acquired knowledge on the importance of sanitation and hygiene as the intervening factors connecting water supply to good health as suggested by Kendie (2002) in the F-diagram.

Therefore, the views expressed by Melchoir (1989) that improved WASH facilities alone does not automatically lead to appropriate use and adoption of good hygiene was at variance with what happens in Adandan D/A Basic. School authorities believed that once facilities were available and were well maintained, pupils had confidence and made conscious efforts to ensure their optimal use. By so doing, they could improve their hygienic behaviour practices which might invariably reduce their risk of disease contraction and transmission as indicated in the F-diagram discussed in Chapter Two (Bolt & Caincross, 2004; Kendie, 2002). This viewpoint is in line with Kendie's (2002) argument that since effective use of sanitation facilities is a behaviour issue which relates to hygiene behaviour, most visible evidence of proper sanitation is the presence of a clean toilet facility for the disposal of human waste.

A leader of the school health club of a WASH school further explained that WASH activities of pupils were supervised by either the SbHC members, pupils in the Upper Primary or by their teachers. Further to this, it was

observed that pupils, mostly Health Club members, were assigned by the SbHC. to ensure there was enough water for drinking and hand washing, and the sanitation facilities were cleaned at all times. The SbHC at Adandan D/A Basic School noted that:

> "everyone acted as a "watchdog" of each other in order to ensure that his or her colleague puts up the right WASH behaviour practices."

One issue that came to the fore during the FGDs was when pupils voiced the kinds of punishment meted out to offenders of WASH behaviour practices. They explained that if one commits an offence in the school, he or she was made to clean the toilet or the urinal. Such an act did not seem counterproductive to ensure regular practice of good WASH behaviours among pupils who were being encouraged to adopt and practice such behaviours as a lifestyle. This was because pupils may not see the need to regularly clean their WASH facilities as they may assume such practices was a punishment rather than a lifestyle. This could to a large extent defeat the aim of using school children as agents of change. Other disciplinary measures which may impact positively in teaching and guiding children by letting them know what behaviour is acceptable in a way that is firm, yet kind could be employed. Such actions would strengthen the bond and increase trust between teachers and pupils. Figure 8 shows pupils washing their hands in Adandan D/A Basic.

Figure 8: Some pupils in Adandan D/A Primary their washing hands
Source: Field Survey; Otami (2019)

In Kyirakaa D/A Primary School, the SbHC indicated that the school's action plan was to ensure rigorous hand washing practice by all including teachers. According to the Co-ordinator, hand washing with soap and water at critical times was perceived as the safest way to avoid any form of contamination as a result of contact with faeces or dirt. With the understanding of the germ theory, the Co-ordinator explained that when hand washing becomes part of the daily routine of children, it does not easily fade away, a view equally expressed by Curtis, Danquah and Aunger (2009). The Co-ordinator further explained that the school authority had constantly briefed the Parents Teachers Association (PTA) of the school on the important role school health played in the education of their children. This therefore, the PTA in one of their meetings unanimously agreed to actively support the school by charging each pupil's parent to provide a tablet of soap and a toilet tissue every term. Another decision by the PTA was to ensure that pupils did not share drinking cups. Therefore, each child had acquired a drinking cup which

was neatly kept in the school's cupboard in each classroom. Figure 9 shows a teacher at Kyiraka D/A Basic washing her hands after teaching.

Figure 9: A teacher in Kyirakaa Basic School demonstrating how to wash hands

Source: Field survey, Otami (2019)

Though the school's action plan on WASH was to ensure rigorous hand washing was practiced by all, one teacher indicated that pupils were also encouraged to practice safe disposal of solid waste. Therefore, the school authority had provided enough waste bins at vantage points which were very visible for all to use. Like Adandan, D/A Basic School, the environment at Kyirakaa D/A Primary revealed that not only did the school have enough hand washing facilities, but also, a clean compound. Pupils were seen practicing hand washing before using cups for drinking water, before eating, after

playing, and after visiting the urinals and place of convenience with little supervision. Every classroom had hand washing facility in front of it.

The School-based Health Co-ordinator pointed out that all teachers in the school also played additional role by monitoring and supervising pupils to wash their hands regularly at critical times to avoid contamination. Teachers indicated that they regularly explained to pupils the need to observe good personal hygiene. The views expressed by the teachers resonates with the findings of Zwane and Cramer (2007) and Batuga (2013) who argued that improved water supply, sanitation and hygiene facilities alone did not automatically lead to appropriate use and adoption of good hygiene unless the hygiene component of water supply and sanitation programme is strengthened.

When pupils were asked during the FGDs what the school authorities did to anyone who refused to adhere to any of the instructions on proper hand washing and safe disposal of waste, pupils expressed that teachers caned them. The institution of such strict compliance with these rules might have accounted for the neatness on the compound. Yet, it might not ensure a long-lasting behaviour change as pupils may not be encouraged to perform such behaviours once they were alone. This finding to a large extent confirmed Kendie's (2002, p 75) argument that "while it is the responsibility of the teacher to ensure learning takes place, most health education programmes have been rather didactic which might seldom appeal to the learner". Therefore the need for teachers to employ positive discipline to correct behaviours is very important.

In Kwanan D/A Basic School for example, the SbH Co-ordinator indicated that they were yet to put the school's WASH plan into action. The reason given for the delay in working towards it by the Co-ordinator was their inability to get a School Health Club in place. This according to the Co-ordinator, all stakeholders especially the PTA and the School Management Committee (SMC) needed to accept the plan before it could be implemented. Though getting all stakeholders on board is laudable, important tenet of ensuring the sustainability of the programme, yet, the delay could hamper its achievement bearing in mind the amount of time spent by the school to get an action plan in place to be fully accepted. This suggest pupils may not be exposed to good WASH behaviour change before they complete school.

An observation of the school compound revealed; place of convenience, good drinking water supply, water for hand washing and separate toilet and urinal for boys, girls and teachers were present. However, there were no bins for sanitary disposal, place of convenience was not well kept, there was inadequate water for hand washing, unavailability of soap for hand washing, and hand washing facility was far from place of convenience. The observation further revealed most pupils did not practice hand washing even after defecation though some were prompted by their teachers to do so. Generally, pupils' observation of good hygiene behaviour practice was very poor compared to Adandan and Kyirakaa D/A Basic Schools. There were no strict supervision from teachers to ensure pupils practice WASH behaviours they have learnt in the classroom.

Although the School based Health Co-ordinator had reported that their motivation to adopt a policy of good hygiene for all was informed by the germ theory, however, observations in the schools revealed that they did not practice such policy in the school. The situation in Kwanan D/A Basic revealed that knowledge of WASH issues alone did not necessarily translate into behaviour change practice. This finding is consistent with Van Wijk and Murre (2003) that better knowledge does not in most times lead to action unless it was supported by conscious effort to use such knowledge acquired.

In Odoben Amafua Basic the School based Health Co-ordinator reported that the action plan on WASH for the school was "total cleanliness for all". What this action plan meant was that, pupils would be made to observe regular hand washing at critical times and ensure clean school environment. The rational for this WASH action plan was that pupils would be educated to know and maintain good health which was seen as key to development. Through regular maintenance of WASH facilities in the school and regular practice of hand washing with soap, children might acquire good health related knowledge, values, skills and practices, to be empowered to pursue a healthy life and share the information with their households (Bresee et al., 2014).

However, observation of the school compound gave a picture different from what the action plan communicated. Unlike Adandan D/A Basic and Kyirakaa D/A Primary schools, the sanitary facilities available in Odoben Amafua Basic School were not clean. For instance, there were used toilet tissues on the floor of the place of convenience, no bins for sanitary disposal within the school, no soap or cleaning agent, and, the hand washing facility

was not close to the toilet facility. Beside these observations, the school compound was clean at the time of the visit, and there was availability of good drinking water supply, and pupils were seen observing hand washing.

Figure10: Pupils in Odoben Amafua D/A Basic School washing their hands
Source: Field survey; (2019)

The analysis on extracurricular activities that the schools had employed to ensure pupils were fully equipped with necessary values, skills and knowledge on WASH issues revealed that the schools have, to a large extent, demonstrated their commitment in ensuring that pupils practice good and proper WASH behaviour practices especially in WASH schools. It could be said that the institution of extracurricular activities by the school authorities might be one of the several ways of preparing pupils to act as agents of change in WASH behaviour practices in schools, home and in their communities.

Availability of WASH learning materials in both school-types

The study further sought to examine whether both school-types had adequate WASH learning materials such as posters, stickers, flyers, and

reading materials to aid in the teaching of good WASH behaviours is shown in Table18. The results show that all the schools did not have video and audio tapes except pictures and reading materials.

Table 18: Availability of WASH learning materials in both school-types

	WASH learning materials			
School	Posters/flyers	Video/Audio tapes	Pictures	Reading materials
Adandan	Yes	No	Yes	Yes
Kyirakaa	Yes	No	Yes	Yes
Odoben Amafua	Yes	No	Yes	Yes
Kwanan	Yes	No	Yes	Yes
Amoanda	Yes	No	Yes	Yes
Sowotuom	Yes	No	Yes	Yes
Ogonaso	No	No	Yes	Yes
Nyamebekyere	Yes	No	Yes	Yes

Source: Field survey, Otami (2019)

Most of these materials on WASH, according to the District SHEP Co-ordinator, were given to them by UNICEF during workshops for School based Health Co-ordinators. Observation in the schools revealed that most of the materials on WASH especially posters and flyers were kept and locked in the Head teachers' offices although a few had been displayed on the walls of the classrooms. However, it was expected that the pictures, posters and flyers should be pasted on walls of the classrooms or outside which would be visible to everyone and to serve as a reminder on the need to practice good WASH behaviours. When asked why the materials had been kept in the cupboard, the SbHC at Kwanam explained that the pupils kept destroying them so they only showed it to them during school worship or assembly or when discussing WASH issues. Figures 11 and 12 indicate some posters and flyers on WASH available in the schools.

Figure 11: Picture of a torn poster at Kwanan D/A Basic School

Source: Field survey, Otami (2019)

Figure 12: Pictures of some posters available in WASH schools

Source: Field survey, Otami (2019)

A similar situation was observed at Odoben Amafua D/A Basic, where, school teachers brought the WASH materials out to show to pupils during school gatherings and reminded them of the need to practice good WASH behaviour. Such a situation by the school authorities could undermine the aim of the WASH programme. This is because pupils may not be able to make proper use of WASH materials available to make informed choices.

Availability and status of WASH facilities in both school-types

According to Van Wijk (1994) the availability and management of water supply, sanitation and hygiene facilities were the most important barriers to many infectious diseases. This was because with appropriate facilities, people are motivated to practice safe behaviour which could reduce their risk of becoming exposed to diseases. Therefore, the study identified the various WASH facilities in school and their status.

The results in Table 19 show that apart from Nyamebekyere, all non-WASH schools had separate latrines and urinals for boys and girls which were closer to the school compound, and were user friendly. However, these schools did not have the following WASH facilities; refuse bins, soap or detergents for hand washing, tissues for cleaning hands, and gloves for cleaning the latrines. The head teachers in the non-WASH schools claimed these items are budgeted for under the capitation grant for the school. Therefore, they could purchase them as and when the grants were released. When asked the time capitation grants would be released to schools, they indicated that they did not know when the money would be paid.

Table 19: Availability of WASH facilities in non-WASH schools

Availability WASH facility	Non-WASH School			
	Nyamebekyere	Amoanda	Ogonasu	Sowutuom
Drinking water	no	yes	yes	yes
Separate toilet	no	yes	yes	yes
Separate urinals	no	yes	yes	yes
Hand washing bowl	yes	yes	yes	no
Soap for hand washing	no	no	no	no
Water for hand washing	yes	yes	yes	yes
Refuse bins	no	no	no	no
Sweeping brooms	yes	yes	yes	yes
Towel/tissue for cleaning	no	no	no	no
Disinfectant/ detergent	no	yes	yes	no
Gloves	no	no	no	no

Source: Field survey, Otami (2019)

The lack of funds to acquire such items by the schools could impede and defeat the objective of ensuring good WASH behaviours practices in school. This finding resonates with Assefa and Kumie (2014); Alello, Coulborn, Perez and Larson (2008); Aduku (n.d) that the insufficiency of WASH facilities in schools makes WASH education ineffective.

Contrary to the experiences in the non-WASH schools, the results in Table 20 indicate that apart from Kwanan and Odoben Amafua which did have some WASH few WASH facilities such as gloves, disinfectants and refuse bins, the WASH schools had all other WASH facilities including separate toilets and urinal for boys and girls which were closer to the school compound and user friendly.

Table 20: Availability of WASH facilities in WASH schools

WASH facility available	WASH Schools			
	Adandan	Kyirakaa	Odoben Amafua	Kwanan
Drinking water	Yes	Yes	Yes	Yes
Separate toilet	Yes	Yes	Yes	Yes
Separate urinals	Yes	Yes	Yes	Yes
Hand washing bowl	Yes	Yes	Yes	Yes
Soap for hand washing	Yes	Yes	Yes	No
Water for hand washing	Yes	Yes	Yes	Yes
Refuse bins	Yes	Yes	Yes	No
Sweeping brooms	Yes	Yes	Yes	Yes
Towel/cloth for cleaning	Yes	Yes	Yes	No
Disinfectant/ detergent	Yes	Yes	Yes	No
Gloves	Yes	Yes	No	No

Source: Field survey, Otami (2019)

The head teachers indicated that they use the Internally Generated Funds (IGF) which are generated during PTA meetings, and morning worships to buy the items for use. Comparing the available facilities in both WASH and non-WASH schools as shown in Tables 22 and 23, those in the WASH category had more facilities. The reason was because of the interventions received from the donor agencies such as UNICEF and CARGIL. Non-WASH schools on the other hand, depended on government intervention and key stakeholders such as the Ghana Health Service and the District Assembly.

Sources of drinking water in WASH and non-WASH schools

Improved drinking water sources are perceived as those that are likely to be protected from outside contamination, and from any faecal matter. These include boreholes, protected wells, stand pipes, and household connections. Two sources of drinking water, boreholes and wells, were identified in both school types. The results in Table 21, show a greater number 114(88.4%) of

pupils, in the WASH schools use improved water supply, while the largest cohort 106(74.1%) of pupils in the non-WASH schools reported they use water from wells (unprotected) considered as unimproved sources of water supply. It was revealed, during the FGDs that, pupils from the non-WASH schools use borehole water for drinking which is fetched in bottles and carried to school. Such actions could still lead to contamination if, for instance, the bottles were not properly washed.

Table 21: Sources of drinking water in both school-types

	Sources of drinking water at school					
Type of	Borehole (N= 151)		Well (N=121)		Total (N=272)	
school	Freq.	%	Freq.	%	Freq.	%
WASH	114	88.4	15	11.6	129	100.0
Non-WASH	37	25.9	106	74.1	143	100.0
Total	151	55.5	121	45.5	272	100.0

Source: Field survey, Otami (2019)

Status of latrines in school

The status of latrine was evaluated using the following criteria (Humphrey, 2002);

i. State of maintenance

ii. User friendliness.

State of maintenance of latrines

The maintenance of latrine was determined by its cleanliness and its functionality. Pupils asserted that they used the place of convenience to avoid diseases and smell on the school compound. There were no traces of human faeces around the compound in all the WASH schools visited. However,

figures 13 and 14 show that latrines at Kwanan and Odoben Amafua schools had not been cleaned, with sanitary tissues on the floor. All urinals were not scrubbed making the place smelly.

Figure 13: Latrine and Urinal for pupils in Kwanan D/A Primary School
Source: Field survey, Otami (2019)

Figure 14: Latrine and Urinal for pupils in Odoben Amafua D/A Primary
Source: Field survey, Otami (2019)

The situation at the non-WASH schools was not different. Though there were some WASH facilities available, some of them were not properly maintained. For instance, in Nyamebekyere, the place of convenience was far from the school buildings and it was not clean though pupils use it. However, Ogonasu, Sowutuom, and Amoanda had clean facilities which were in use. Figure 15 shows the state of latrine used by pupils and teachers of Nyamebekyere D/A Primary.

Figure 15: Latrine for pupils at Nyamebekyere D/A Primary
Source: Field survey, Otami (2019)

User friendliness of latrines

User friendliness of latrines was measured based on the simplicity in usage and easy accessibility of the facility which does not pose danger to pupils. In assessing whether the facilities could be easily accessed and used by all pupils in the school irrespective of their age group, it was observed that pupils in the WASH schools especially, lower primary, did not have difficulties accessing the facility. The situation at the non-WASH schools was not very different. The latrines at Amoanda, Sowutuom and Ogonasu were accessible to all pupils and user friendly. However, in Nyamebekyere the place was neither accessible nor user friendly. The surrounding of the latrine was bushy making children susceptible to snake and scorpion bites. From the conceptual framework, access, proper maintenance and user friendliness to WASH facilities is important to children's agency therefore, in a situation such as witnessed in Nyamebekyere, of might not motivate pupils to practice

proper sanitation as they might be forced to practice open defecation in their schools. This might also impede pupils' role as agents of change in WASH behaviours.

As shown in Figure 16 the toilet facility at Nyamebekyere D/A was made of wooden slaps joined together on a dug hole.

Figure 16: State of latrine for pupils at Nyamebekyere D/A Basic
Source: Field survey, Otami (2019)

Figure 17 also shows pupils, especially in lower primary, walking through bush to attend to nature's call.

Figure 17: Pupils going into the bush to defecate at Nyamebekyere

Source: Field survey, Otami (2019)

Availability of School Health Clubs in WASH and non-WASH schools

According to the School-based Health Club Co-ordinators, the Club promotes effective learning in school by supporting pupils to improve their knowledge and understanding of health issues which may affect them directly. It also helps to bring pupils together and guide them to adopt positive behaviours to prevent poor health by translating into action good WASH habits learnt at school. Club members carry information learnt at school and share with their peers and families. Through this, members are able to influence WASH behaviour practices of their siblings, parents and friends. School-based Health Co-ordinators further indicated that the School Health Club is a voluntary grouping which is open to all pupils at any level of the school.

Pupils meet under the supervision of their teachers to learn, discuss and take action on issues related to their health and wellbeing whilst they are in school. The School-based Health Coordinator and two other teachers on weekly roll, are automatic members of the School Health Club. There are no restrictions on the size of the Club. Pupils may join the Club once they enrolled in the school.

At Kyirakaa, the SbHC pointed out that during Parents Teachers Association meetings, members of the School Health Club are made to educate parents on good WASH behaviour practices. The District SHEP further indicated that during community outreach programmes, organised by the District Health Directorate, in collaboration with the Education Directorate, members of the club are given the opportunity to educate the

communities on proper hygiene activities, especially, on hand washing. The club, through role plays, also educate the community during community durbars such as festivals, Independence Day celebrations, and funerals on good hygiene behaviour practices.

Teachers also indicated that during sporting activities, members of the club assisted in ensuring other pupils practice proper hand washing behaviour and keep their bodies clean. Members of the club indicated that they mostly do demonstration to the entire pupils in the school during worship time on how to practice proper WASH behaviours such as how to wash hands; items needed to wash hands and the need to keep their bodies clean. A general observation on club members during the FGDs indicated that most of them practiced good personal hygiene. They had clean school uniform, clean teeth with no particles in-between teeth; well-combed hair; clean fingernails with no body and mouth odour. This suggests that pupils who were members of the club practiced the tenants of what they learnt during meetings. This is, therefore, in line with UNICEF (2011) requirements for WASH schools which is to train School Health Club members in the schools to reach out to their communities with good WASH behaviour practices.

Summary

Facets of WASH behaviour activities in both WASH and non-WASH schools in the Asikuma-Odoben-Brakwa District which the research objective one explored revealed that, generally, the schools follow the SHEP information provided in curriculum for basic schools. The WASH schools had put in adequate efforts such as drawing of an action plan and generation of additional funds to acquire WASH items such as soap and tissue papers to

ensure availability of resources for all in the school to practice proper WASH behaviours. Enabling and reinforcing factors discussed in the conceptual framework are key to success of pupils' roles as agents of change in WASH behaviours. This is because the availability of these facilities sets the tone for the entire institution by regulating WASH behaviours of both principals and their agents. However, since most of the WASH learning materials, especially, the visuals were not displayed in the schools for pupils to see and become conscious of their behaviours, their daily practicing of proper WASH behaviours and their role as agents of change might be hampered.

CHAPTER FIVE

ROLE OF TEACHERS IN INFLUENCING PUPILS' WASH BEHAVIOUR PRACTICES

Introduction

The teacher plays a crucial role in the development of the child. Teachers act as not only care givers in the school, but also, assist children to respond appropriately to the school environment through set rules and regulations, and curriculum activities. Teachers have also been identified as catalysts in the implementation of School Health Education Program (Ayodeji, 2015). In this vein, teachers are perceived as very influential in helping pupils to adopt good hygiene behaviour practices to act as agents of change in their homes and communities.

Ohlin (2012) argued that schoolchildren could obtain knowledge and be agents of behaviour change if teachers were willing to get involved in providing them with the right information. In doing so, teachers themselves must be knowledgeable in the information they give to their pupils. An examination of the role teachers' play in influencing school children's WASH behaviour change practices assessed their knowledge in WASH as well as other WASH related activities they perform in school.

Knowledge, Attitude and Practices of WASH Behaviours among Teachers

Training received by teachers on WASH

According to Grebow, Green, Harvey and Head (2000), training of both pre-service and in-service teachers is major factors in the success of the school health education programme. However, Ampeh (2008) noticed that

school health is not included in the curriculum of the teacher training institutions though teachers are required to conduct general hygiene inspection, observe and monitor unusual behaviours and problems affecting pupils' health. The teachers reported that they did not receive any WASH or SHEP training during their pre service preparations.

When asked what influenced their knowledge in WASH, 31(55.4%) teachers reported that they received information from WASH training workshops, which were mostly organised by GES and other development partners such as UNICEF or their School based Health Coordinators.

Table 22: In-service training received by teachers on WASH

School type	In-service training received					
	Yes	(%)	No	(%)	Total	(%)
WASH	17	70.8	7	29.2	24	100
Non-WASH	10	41.7	14	58.3	24	100
Total	27	56.3	21	43.7	48	100

Source: Field survey, Otami (2019)

Teachers from both school-types who did not receive any training on WASH further indicated that they acquired such knowledge through their SbHCs who mostly share WASH information with them during staff meetings and other school gatherings. Others further reported that they relied either on their personal experiences as adults, or knowledge they acquired in integrated science during their Senior High School education or on hand books and manuals on WASH.

The results on the training received by teachers on WASH indicated that, generally, they had no prior training on WASH before being recruited to teach. Therefore, teachers' level of knowledge and skills on WASH issues appeared inadequate to train pupils, though, teachers received in-service trainings on WASH. The inadequate training on WASH for teachers resonate with the views expressed by Grace (2012), that, teachers needed to have adequate knowledge and skills on WASH issues to be able to train learners to improve their WASH behaviour practices.

Methods used by teachers to communicate WASH information to pupils in both school-types

Bresee et al (2014) argued that teachers employ various techniques to engage and communicate WASH information to children regularly in their classrooms and schools. This study also revealed that teachers in the selected communities employed different interactive and participatory techniques to teach children about WASH. The results in Table 23 show that teachers employed mostly the demonstration method 22(39.3%) to communicate WASH information to pupils. The teachers explained that they used this method especially during morning assembly, worship and club meeting times. Teachers pointed out that during such meetings a club member is invited to demonstrate to other pupils the skills employed in hand washing.

The number of teachers, 16(28.6%), who also indicated that they teach children to dramatize what has been taught in school especially during school durbars and open days where parents and the entire community are present. During these events, pupils to dramatize the need to observe good hygiene

practices in their homes and communities in order to avoid contracting WASH related diseases.

Table 23: Methods used by teachers to communicate WASH information to pupils in both school-types

Strategies	WASH		Non-WASH		Total	
	Freq.	%	Freq.	%	Freq.	%
Discussion	3	27.3	8	72.7	11	22.9
Demonstration	10	52.6	9	47.4	19	39.6
Dramatising	7	63.6	4	36.4	11	22.9
Peer to peer	3	75.0	1	25.9	4	8.3
Storytelling	1	33.3	2	66.6	3	6.3
Total	24	100.0	24	100.0	48	100.0

Source: Field survey, Otami (2019)

To ensure that pupils put into practice good hygiene behaviours taught them in schools, teachers reported that they conduct a general inspection on pupils' teeth, finger nails, hair, clothes and body during morning assemblies. For instance, in Odoben Amafua, a SbHC pointed out that, inspections were conducted every two days, while in Adandan and Kyirakaa it was throughout the week. Kwanan had general inspection on Mondays and Wednesdays. For the non-WASH schools, SbHCs indicated that general inspection was only on Mondays. The SbHCs further claimed that pupils observe good personal hygiene mostly on Mondays than other school days. The SbHCs observed that, it was a norm in most households, as most families wash their clothes, including school uniforms, during weekends. This response from the SbHCs resonates with the findings of Kendie (2002) that, family clothes are washed

by women who are generally responsible for washing once a week. Some pupils also shaved their hair and cut their finger nails, during weekends, in anticipation of the general hygiene inspection on Mondays. The SbHC in Kyirakaa explained that:

> Monday morning inspection on personal hygiene of pupils is of a special kind. Pupils seemed more prepared for the day. They looked in their best than all other days.

When asked whether pupils were aware that hygiene practices are not a single affair but a lifestyle, the SbHC further responded in affirmative and further explained that:

> This has been a challenge to us and the pupils since most parents do not have the money to buy more than one school uniform for their children or the money to buy soap for pupils to wash their uniforms daily after school. They often think it is a waste of soap and water which they cannot afford to provide daily. We are trying to make them understand but it is not easy. For the pupils, we do not have problems but for parents, it is still difficult. These are things we do not have control over. This gap is really a threat to the sustainability of this programme.

This explanation by the teacher confirms an observation from Kendie (2002, p67), who opined that "poverty makes it impossible for the child to have more than one or two shirts and shorts, underwear is considered a luxury" in rural communities.

Another area of concern was the use of corporal punishment by teachers to ensure pupils observed good personal hygiene. The SbHC, in all the schools sampled, confirmed an earlier revelation by pupils that they were sometimes flogged by teachers when they did not observe good personal hygiene during inspections. When asked if such a move will not rather deter pupils from practising good personal hygiene, the teachers responded that it would rather encourage pupils to see the seriousness and importance of observing such behaviours. To them punishment rather served as a deterrent to others. A SbCH responded,

> It is not about the health of one person we are talking about here, their actions and inactions may affect others, therefore whatever means we need to employ to ensure that these children get it right we must do.

This response from the SbCH affirms a response of a pupil in Kwanan who believed that people must be flogged in public when found not to practice good hygiene behaviours. Like the behaviourists, who believed that behaviour is learned and it is strongly influenced by environmental factors in which an external stimuli act for effects to manifest (Woolfolk, 2007), the SbHCs also believed that once previous behaviours have been rewarded (positively or negatively), children are likely or unlikely to repeat those behaviours. When further asked whether flogging pupils is not against the right of the pupils bearing in mind the Ghana Education Service's position on corporal punishment, another teacher responded by quoting from Proverbs 13:24

> "if you don't punish your son, you don't love him. If you do love him, you will correct him". (The United Bible Societies, 1994 p445)

The SbHC explained that since they act as caregivers of the pupils in the school, they are responsible for their wellbeing and therefore, they are required to discipline those who decide to be recalcitrant. This acknowledgement from the teachers on their role as caregivers seemed laudable and it revealed them not only as trusting, responsive and reliable caregivers, but also, shows a secured relationship existed between them and the pupils which the agency theory considered as a good participatory practice between the principal and the agent (Adelma & Taylor, 2011). Another SbHC from Kyirakaa who also believed in flogging of pupils who refused to observe good WASH practices maintained that good personal hygiene is more than just a personal human right issue. He argued that:

> it is not an individual decision but a collective one, and since the effect may affect other people, it becomes a communal responsibility and right not an individual's own.

The SbHC explained that since it was their duty to teach the pupils so that they could also teach their family members, the only place to do that is the school. Such action by teachers reaffirms their roles as experts in knowledge who offer the platform for learners to practice what they teach them.

However, the Regional and District SHEP co-ordinators expressed contrary views on the issue of flogging to enforce the observance of good personal hygiene. The Co-ordinators indicated that flogging would rather deter pupils from practicing the desired hygiene behaviour. According to the Regional SHEP coordinator:

> since the programme is about behaviour change, pupils need to understand and accept why it is important to observe such

behaviour change practices. By so doing, pupils would own it and make it part and parcel of their daily live activities.

The District SHEP coordinator also reiterated that:

> once pupils are forced to observe behaviour such as hand washing with soap, they will tend to forget when they are out of pressure. Therefore, teachers should rather take pupils through the rudiments of WASH behaviour practices continuously for them to get the right message so that such practices become part of their daily lifestyles.

According to a report by UNICEF/IRC (1998), since traditional classroom teaching is not effective in bringing about changes in hygiene behaviour, it is necessary that alternative ways be sought. When teachers were asked whether they used alternative methods in teaching pupils in school other than what has been indicated in the syllabus, some of the them responded that since the syllabus indicated how the various topics should be taught, they employed same in WASH lessons just like they did to all other lessons. Others also indicated that they integrate and introduce the teaching and learning of WASH in most subjects as they do to the teaching of HIV/AIDS. A teacher in Kyirakaa indicated that pupils in his class are made to sing a WASH song, tell a story or demonstrate how hand washing is done before he starts with his lessons. This method of disseminating information to students conforms to the guidelines of UNICEF/IRC. According to the guidelines effective hygiene education messages need to be action-oriented; practical; simple; understandable and make use of local communication methods. The SbHCs indicated that depending on the class, they employ either role play; discussion

or dramatisation. In Kyirakaa, the SbHC pointed out that they practiced daily hand washing before and after every activity. The school has a hand washing facility in front of the class for teacher's use. Pupils also monitor teachers to ensure that they practice what they teach them.

Another approach teachers employ to teach children about WASH during morning worship was peer teaching. Teachers pointed out that WASH club members were invited to dramatize, demonstrate, teach or tell the entire school community about WASH during school gatherings. In Odoben Amafua D/A, teachers indicated that they desire every pupil to be WASH conscious, so pupils are invited (mostly club members) at random to demonstrate or talk to the entire school about WASH. The SbHCs explained that pupils become very conscious about what they have learnt, since they could be invited at any point in time to share their ideas. As a SbHC in Odoben Amafua D/A puts it;

"you can't preach virtue and practice vice,

your own mates will look at you and laugh at you."

This means that WASH activities should be made easy for pupils to understand and adopt as part of their normal daily activities but not as a onetime activity. This resonate with Snel (2003) and Ampeh (2008) who posited that classroom teachers are the best persons to serve as role models to pupils on health and hygiene related issues. In this regard, the presence of teachers to teach pupils good hygiene behaviours is an avenue for pupils to put them into practice (Knowles, 2014). Thus, according to Breese et al (2014) since parent-child communication starts from the teacher who is seen as knowledgeable and a trusted source of information by children and parents, the teacher must serve as a role model and provide discrete instruction on

WASH to school children in order to influence their parents' WASH behaviours.

Summary

This chapter delved into roles teachers could play in influencing school children's WASH behaviour change practices in both WASH and non-WASH schools regarding objective two. It was revealed that teachers, generally, were not given any formal training on WASH behaviours during their preparations. Most of the teachers in the WASH schools, however, receive some in-service training on WASH from donor agencies whereas those in non-WASH schools did not. Thus, most teachers in non-WASH schools obtain WASH information on their own. From the conceptual framework, teachers, as principals, must have adequate knowledge to be able to impart the right information to their pupils who serves as agents of change to their families and communities. However, the lack of training on WASH issues could compromise the role teachers play in influencing pupils to serve as agents. This is because in the event where a teacher has misconception or inappropriate information on WASH, it might result in pupils not to be given appropriate information. That is a challenge to the institutional agency theory which this study adopted where a breakdown in any of the structures might affect the entire system.

CHAPTER SIX

KNOWLEDGE AND PRACTICES ON WASH BEHAVIOURS AMONG PUPILS IN WASH AND NON-WASH SCHOOLS

Introduction

One way available for schools to shape the child is through health education programmes which also have a direct impact on children's learning abilities and their readiness to enter school (Ampeh, 2008). This is because school health intervention programmes equip school children with basic knowledge, skills and attitudes in health for psychological, social and physical wellbeing they need to start, sustain, stop or change behaviours (GES, 2010).

According to Vivasa, Gelayea, Aboset, Kumiec, Berhane, and Williams (2010) knowledge on WASH is necessary for the practice of proper hygiene behaviours. In support, Ohlin (2012) argued that the acquisition of knowledge of WASH was crucial for children to act as agents of change by communicating to their families what they had learnt in school. By so doing, children felt valued and became responsible for their lifestyle choices that promoted good health. Therefore, it was important to assess how knowledge and skills pupils acquire in school could place them in a way to act as agents of change in WASH behaviour practices in their community.

This chapter, therefore, presents the results on pupils' knowledge and practices of WASH behaviours. To do this, pupils' knowledge of water supply; sanitation; and personal hygiene behaviours were evaluated using the test for comparing two independent proportions to determine if proportions of pupils from the school-types (WASH and non-WASH) differ in knowledge on WASH behaviours at school and at home. The normative WASH behaviour

practices of pupils to ascertain whether they put the knowledge of WASH issues acquired in school into practice at home were further examined.

Pupils' knowledge of drinking water supply behaviours in both school-types

Pupils' knowledge of drinking water supply behaviours was considered based on the following: knowledge of sources of drinking water supply; knowledge on the constituent of improved water supply; ways to ensure improved drinking water; proper place of storing drinking water; water related diseases; and water borne diseases. The test for comparing two independent proportions was employed to determine where pupils differ in their knowledge of drinking water supply behaviours.

Sources of drinking water at home

Water is a contributory factor to the status of health of a population. The type of water people drink may impact positively or negatively on their health (Humphrey, 2002). Water is often classified as improved or unimproved. Sources considered as improved are household connection to public pipe borne water supply system, public standpipe, borehole, protected (lined) dug well, protected spring, and rainwater collection whereas unimproved sources are unprotected ones are wells and springs, vendors, sachet water and tanker-trucks are considered unimproved.

The source of water supply for domestic use generally mirrors the use of drinking water in the district with the exception of sachet water which was not used at all for other domestic purpose (GSS District Analytical Report, 2014). Pupils were asked to indicate their sources of water supply at home. Large proportions from the WASH schools 77(59.7%) reported their sources

of water was from boreholes whilst 31(24.0%) were from stream and 21(16.3%) from unprotected wells. The results from homes of pupils from the non-WASH schools showed 58(40.6%) obtained water from boreholes, whilst 51(35.7%) and 34(23.8%) were from streams and open wells respectively, considered unimproved sources of drinking water.

The results on the sources of water for domestic use in pupils' homes by both school-types are reflection of what pertains in the district where most people in the district depend on borehole water for domestic use compare to the other sources. (GSS, District Analytical Report, 2014).

Table 24: Sources of drinking water supply at homes of pupils from both school-types

	Sources of drinking water at home							
School	Borehole		Streams		Open Well		Total	
type	Freq.	%	Freq.	%	Freq.	%	Freq	%
WASH	77	59.7	31	24.0	21	16.3	129	100.0
Non-WASH	58	40.6	51	35.7	34	23.8	143	100.0
Total	135	49.6	82	30.2	55	20.2	272	100.0

Source: Field survey, Otami (2019)

Pupils' knowledge of the constituents of good drinking water supply

An improved drinking water supply is determined by its physical (colour, odour, taste and turbidity), chemical (amount of mineral) as well as microbiological (presence of germs) parameters (Humphrey, 2002). To establish pupils' knowledge in what constituted an improved drinking water supply, responses were grouped under physical and microbiological parameters as pupils did not provide any responses on a chemical parameter.

The examination of pupils' knowledge of what constitute an improved water supply is presented in Table 25.

The table shows that majority 152(55.9%) of pupils from both school-types reported improved water supply to be water with no dirt, scent, colour and taste as against 120(44.1%) who believed that an improved drinking water supply was one with no solid particles. The results further show that while majority, 72(55.8%) pupils from WASH schools indicated microbiological parameters to be what constitute improved water supply, majority 95 (66.4%) of pupils from non-WASH schools indicated physical parameters such as colour, taste, and dirt.

Table 25: Pupils' knowledge of the constituents of good drinking water supply in both school-types

	Improved drinking water supply					
School	Physical (N=152)		Microbiological (N=120)		Total (N=272)	
type	Freq.	%	Freq.	%	Freq.	%
WASH	57	44.2	72	55.8	129	100.0
Non-WASH	95	66.4	48	33.6	143	100.0
Total	152	55.9	120	44.1	272	100.0

Z calculated = 3.69; p = 0.0002 (two-tail); Std. error = 0.0603; Z critical = 1.96

Source: Field survey, Otami (2019)

According to Davis, Garvey and Wood (1993) physical parameters represent the easiest way to differentiate between water sources and, therefore, are often perceived to be the most important water quality parameter by people using the supply. To test whether there exists a significant difference in

proportions of pupils' knowledge of constituents of improved water supply, a test of comparing two independent proportions was employed.

Ho: There is no statistically significant difference in the proportion of pupils' knowledge of the constituents of improved water supply

H1: There is a significant difference in the proportion of pupil's knowledge of the constituents of improved water supply

The Z calculated equals 3.69 and the Z Critical at 5% significant level (two-tail) equals 1.96. Since the Z calculated was greater than the Z critical, the null hypothesis was rejected. Hence, differences existed in pupils who perceived constituents of improved drinking water supply on physical and microbiological parameters. This was true because the proportion of pupils, 0.559(55.9%), who indicated that good drinking water should be based on physical parameters, were more than the proportion, .441 (44.1%), who indicated microbiological parameters, which was very difficult to detect with visual observation.

This suggests pupils from the WASH schools compared with those in non-WASH schools may be able to better explain the constituents of an improved water supply to their peers and families. This is because majority 72(55.8%) of them looked beyond the ordinary description of water supply. Hence, pupils from the WASH schools may be better placed as agents of WASH behaviour change compared with their counterparts from the non-WASH schools.

However, pupils from both school-types who based their perception of good drinking water on microbiological parameters, invariably, found it difficult to differentiate between physical and microbiological parameters as

their understanding was more on physical attributes. Pupils, during the FGDs, arrived at a consensus and established that an improved water supply was water which looked very clear with no particles or organisms. This does not resonate with Humphrey's (2002) description of the constituents of an improved water supply.

Pupils' knowledge of safeguarding the quality drinking water supply in both school-types

As pointed out by Adinkra-Amo (2007) contamination of water during collection, transport, and storage at home posed a serious risk to health of consumers, especially, those in the developing countries. This is because regardless of how and where water is collected, water storage in places infested with flies, cockroaches and rodents could contaminate it.

The results on pupils' knowledge of how to ensure the safety of good or improved water supply is presented in Table 26. Majority 185(68.0%) of pupils from both school-types reported drinking water should be properly transported from source while about 87(32.0%) indicated that water should be properly stored in container for use.

Table 26: Pupils' knowledge of safeguarding the quality of drinking water supply in both school-types

	Ensuring good drinking water supply					
School type	Proper transportation		Proper Storage		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	92	71.3	37	28.7	129	7.4
Non-WASH	93	65.0	50	35.0	143	52.6
Total	185	68.0	87	32.0	272	100.0

Z calculated = 1.11; p = 0.2673 (two-tail); Std error = 0.0566; Z critical = 1.96

Source: Field survey, Otami (2019)

By proper transportation, pupils explained during the FGDs that, the need to ensure that method of collection as well as the container used to fetch the water from the source should be clean. Containers commonly used for collection of water were a bucket, basin or a jerry can which came in variety of sizes. Kendie (2002) argues that basins and buckets used for water collection from the source to homes could easily be contaminated with dust and dirt. Thus, he explained that the use of the hands, calabash, leaves or polythene to prevent water splashing by the carrier could pollute the water as these may have been contaminated by dust and dirt.

Pupils from both school-types further indicated that proper storage of water, meant ensuring the cleanliness of storage facility, cleanliness of cups used to fetch water from storage facility and cleanliness of lid used to cover stored container to prevent contamination. Pupils further revealed during the FGDs that, their drinking water at home were stored in either clay pots, barrels, buckets or gallons placed in the bedroom or the kitchen. These storage containers were mostly covered with plates using a cup or a bowl to draw water from the container. The use of a common cup to draw water from storage containers for drinking may provide avenue for children to contaminate it. During the FGDs, pupils in a non-WASH school expressed the view that their younger siblings when not supervised by parents always dipped their hands in the drinking water or played with the cup meant to fetch the water to drink it.

This assertion by the pupil confirms Kendie's argument that "the use of common cup and the fact that children drink directly from this cup, expose the stored water to contamination" (Kendie, 2002, p 55).

On how water could be treated, pupils explained during the FGDs that water could be treated either by boiling or by filtering. They further expressed that by boiling water for drinking it was certain all water organisms (germs) were killed. When asked whether they practiced the boiling of water before drinking at home, the pupils responded that they hardly do that because the process took a longer time and a lot of resources are wasted. This confirms Van Wijk and Murre (2003) who argued that, although it was scientifically proven that boiling water for drinking kills organisms, people perceive boiling water to drink as unrealistic and incomplete because it took a lot of time and resources, therefore, might not do it.

To explore whether there exists a significant difference in proportions of pupils' knowledge of how to safeguard the quality of drinking water supply, a test of comparing two independent proportions was used.

Ho: There is no statistically significant difference in the proportion of pupils' knowledge of safeguarding the quality of drinking water supply

H1: There is a significant difference in the proportion pupil's knowledge of safeguarding the quality of drinking water supply

The Z calculated equals 1.11 and the Z Critical at 5% significant level (two-tail) equals 1.96. Since the Z calculated was less than the Z critical, the null hypothesis was therefore accepted. Hence, there was no difference in pupils' knowledge of safeguarding the quality of drinking water supply. This means that pupils from WASH and non-WASH schools in the district exhibited same knowledge of how to safeguard the quality of stored drinking water supply. Further to this question, all pupils responded that it was important to protect their drinking water supply at the home to avoid getting diarrhoea.

Pupils from both school-types during the FGDs further indicated that placing drinking water in the bedroom was the proper way of ensuring its safety. They argued that their parents kept valuable items in the bedroom and so, since water is critical to human life, the proper place for its storage should be the bedroom to avoid any infestation and contamination. They further explained that keeping water in bedrooms would be denying a whole household access to water. They explained that the bedrooms of many households were often under lock and key with their mothers always keeping the keys. Therefore, storing water in the bedroom was a sure way of encouraging people to resort to other unimproved water sources for drinking especially during times when parents were not in the house.

Pupils' knowledge of water related diseases in both school-types

The greatest water supply problem in developing countries is the prevalence of water-borne diseases which is responsible for almost all illnesses and deaths especially in young children. Water related infections are divided into four (Bartram & Hunter, 2015), namely;

i. water-borne infections which develop when pathogens are present in the actual water supply. Examples include diarrhoeal infections, cholera and typhoid. Prevention is mostly through improved water quality and hygiene education;

ii. water-based infections derive from pathogens which spend part of their life cycle in an aquatic host. Examples of this type include Guinea Worm (Dranunculiasis), Bilharzia (Schitomiasis) and Lung Fluke Infection;

iii. water-washed infections; concerned with the amount of water

available for hygiene as this affects the spread of pathogens. Examples include Scabies, Trachomas, lice in hair, and Pinworm infection; and,

iv. water-related insect vector infections associated with pathogens that are spread by insects which feed or breed in water, such as flies and mosquitoes. Malaria, Yellow Fever, Bancroftian Filariasis and River Blindness (Onchocerciasis)

The traditional use of surface water by people in rural communities pose serious health problems, as this type of supply is more exposed to faecal pollution, a contributing factor in most diseases associated with water. Although disease control is attained by drainage and management of water and insecticide use, the installation of wells or boreholes also helps as people would no longer need to frequent infested areas to collect water.

Pupils from both school-types were asked to indicate any two water related diseases they knew. The results in Table 27 show that 167(61.4%) of the pupils indicated diarrhoea, which is water-borne infection, while 105(38.6%) also indicated Bilharzia, which is water-based infection (Table 33).

Table 27: Pupils' knowledge of water related diseases

	Examples of water related diseases					
School type	Diarrhoea		Bilharzia		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	73	56.6	56	43.4	129	100.0
Non-WASH	94	67.7	49	34.3	143	100.0
Total	167	61.4	105	38.6	272	100.0

Z calculated = 1.55; p = 0.1219 (two-tail); Std error = 0.0591; Z critical = 1.96

Source: Field survey, Otami (2019)

To explore whether differences existed in proportions of pupils' knowledge of examples of water-related diseases, a test of comparing two independent proportions was used.

Ho: There is no statistically significant difference in the proportion of pupils' knowledge of examples of water related diseases.

H1: There is a significant difference in the proportion of pupil's knowledge of examples of water related diseases.

The Z calculated equals 1.55 and the Z Critical at 5% significant level (two-tail) equals 1.96. The analysis show that the Z calculated is less than the Z critical, hence the null hypothesis which sought to find no differences in pupil's knowledge of examples of water-related diseases was accepted. Therefore, pupils from WASH and non-WASH schools in the Asikuma-Odoben-Brakwa District exhibited same knowledge of examples of water-related diseases.

Pupils' Knowledge of Sanitation Behaviours in both school-types

Generally, sanitation refers to the condition related to clean environment, adequate treatment and disposal of human excreta and sewage which stop the transmission of diseases especially through faecal-oral route. Poor sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant impact on health (WHO, 2015). Pupils' knowledge on good sanitation behaviours were assessed based on the following: knowledge on how to keep their compound clean and ensuring proper disposal of faeces, especially making use of latrines.

Pupils' knowledge of keeping the environment clean in WASH and non-WASH schools

Generally, pupils indicated that the compound could be made clean by either picking of rubbish; sweeping or weeding and sweeping the compound. Majority 207(76.1%) of pupils from both school-types indicated sweeping and picking rubbish from the ground while 65(28.9%) indicated weeding. The results are presented in Table 28.

Table 28: Pupils' knowledge of keeping the environment clean

	Pupils' knowledge on keeping the environment clean					
School type	Sweeping/Picking		Weeding		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	107	82.9	22	17.1	129	100.0
Non-WASH	100	69.9	43	30.1	143	100.0
Total	207	76.1	65	28.9	272	100.0

Z calculated = 2.51; p = 0.0120 (two-tail); Std error = 0.0518; Z critical = 1.96

Source: Field survey, Oiami (2019)

To explore whether differences existed in proportions pupils' knowledge of keeping their environment clean, a test of comparing two independent proportions was employed.

Ho: There is no statistically significant difference in the proportion of pupils' knowledge of keeping the environment clean.

H1: There is a significant difference in the proportion of pupil's knowledge of keeping the environment clean.

The Z calculated equals 2.51 and the Z Critical at 5% significant level (two-tail) equals 1.96. This showed the Z calculated was greater than the Z critical, therefore the null hypothesis which sought no difference in pupil's knowledge of keeping the environment clean was rejected. This means that pupils from WASH and non-WASH schools in the district had different knowledge of how to keep the environment clean. Further to this, pupils noted in the FGDs that clean environment prevented the contracting of diseases.

Availability of Latrine at pupils' home

Result on availability of latrine at home of pupils from both school-types is shown in Table 29. The Table shows that not all household had latrines. Therefore, families either use the public or school latrines or practiced open defecation.

Table 29: Availability of Latrine in pupils' homes

	Presence of latrine at home					
School	Yes		No		Total	
type	Freq.	%	Freq.	%	Freq.	%
WASH	51	39.5	78	60.5	129	100.0
Non-WASH	21	14.7	122	85.3	143	100.0
Total	72	26.5	200	73.5	272	100.0

Source: Field survey, Otami (2019)

Pupils' knowledge of ways to stop open defecation in WASH and non-WASH schools

Pupils from WASH and non-WASH schools were asked whether there were any known dangers associated with open defecation. In both school-types, pupils indicated in the FGDs that open defecation was bad and needed to be stopped. Pupils further noted that open defecation was a cause of frequent diarrhoeal diseases in the communities. They explained that when

one defecates openly, flies especially houseflies sit on it and move to contaminate food humans consume. When asked during the FGDs why some of them still practiced open defecation at home, the pupils from both school-types responded that it was not a good practice. However, they did not have any alternative since they do not have latrines in most of their homes. Pupils were asked to suggest the possible ways to stop open defecation in their communities. Table 30 shows their responses.

Table 30: Pupils' knowledge of ways to stop open defecation

	Ways to stop open defecation					
School type	Build latrine		Public education		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	73	56.6	56	43.4	129	100.0
Non-WASH	76	53.1	67	46.9	143	100.0
Total	149	54.8	123	45.2	272	100.0

Z calculated = 0.57; p = 0.57 (two-tail); Std error = 0.06; Z critical = 1.96

Source: Field survey, Otami (2019)

The results on pupils' knowledge on the possible ways to stop open defecation in their communities, showed that majority 149(54.8%) of pupils from both school-types reported that people must be encouraged to build latrines in their homes whereas 123(45.2%) indicated people must be educated on the dangers associated with open defecation in order for them to stop. To test whether there exists a difference in proportion of pupils' views on the ways to stop open defecation, the data was subjected to a test of comparing two independent proportions.

Ho: There is no statistically significant difference in the proportion of pupils' knowledge of ways to stop open defecation

H1: There is a significant difference in the proportion of pupil's knowledge of ways to stop open defecation.

The Z calculated equals 0.57 and the Z critical is at 5% significance level (two-tail) 1.96. Since the Z calculated was less than the Z critical, the null hypothesis could not be rejected. Therefore, the results showed no significant difference existed in the views of pupils on ways to stop open defecation. Therefore, household members could be encouraged to build latrines, and be educated on the dangers of open defecation.

When asked if there were other measures to help stop the menace of open defecation, during the FGDs, pupils from both school-types, they suggested methods such as flogging people publicly. They explained that when this happens it would serve as a deterrent to others since some of them intentionally do it. it was further noted that there were communities with good latrines, people were educated on the dangers of open defecation, yet, some recalcitrant ones refused and did it. This revelation shows that having latrines and educating people on its usage might not make people stop open defecation unless such actions are backed by strict enforcement.

On the reasons why they use the latrines they have in the homes, it was revealed during the FGDs that they used the place due to the following reasons:

1. They were afraid of getting sick.
2. The place had been made for all the family members so they were obliged to use it.

3. It was a way of keeping their compounds clean to avoid the spread of diseases.

These responses confirm Bresee et al (2014) findings which revealed that pupils are motivated to use toilets because of care for their home environment and the fear of getting sick.

Pupils' knowledge of hygiene behaviours in both school-types

Kendie (2002) observed that personal hygiene was important not only in the reduction of water-related diseases, but also, in "breaking the transmission of various water-borne and hygiene-related diseases" (p59). For instance, whereas maintaining a clean body or clean clothes could lead to reduction of water-washed diseases, hand washing with water, soap or ash helped to break the transmission route of water-borne diseases (Kendie, 2000). Pupils' knowledge on personal hygiene practices specifically considered;

1. knowledge and practices on good personal hygiene
2. knowledge and practices on skills in observing good personal hygiene
3. knowledge on the facilities and resources that could aid in the practicing of such behaviours; and
4. knowledge and actual practicing of these behaviours at home and at school.

Pupils' knowledge on personal hygiene behaviours in WASH and non-WASH schools

This section examined pupils' knowledge on the constituents of good personal hygiene in behaviours such as hand washing, bathing, cleaning of teeth and washing of clothes. When asked during the FGDs with pupils from both school-types to indicate body parts that generate odour, they mentioned

the armpit, mouth and the anus. When they were further asked to indicate how the body parts that generated odour could be properly maintained to avoid odour, they provided the following responses as shown in Table 31.

Table 31: Responses from pupils on body parts that generate body odour

Body part	Proper management	Resources needed
Mouth	brushing of teeth	tooth paste; tooth brush; ash; charcoal; cotton leaf; plantain peel
Armpit	shaving/ regular bathing	blade; shaving stick soap; water; sponge towel
Anus	cleaning/washing	tissue paper; soap; water

Source: Field survey, Otami (2019)

It came to light during the FGDs that community members who did not have access to latrines at home often do not use tissue paper after defecation. Pupils from the non-WASH School explained that most pupils used maize stick or leaf to clean after defecation. A practice most of the pupils agreed was common in their communities. When further asked if they do same at school, pupils responded in the affirmative. They explained that they may have to use papers so in the event they do not have, a leaf or maize stick is used to clean after defecation.

Pupils' knowledge of personal hygiene behaviours in WASH and non-WASH schools

Pupils from both WASH and non-WASH schools were asked to mention the various skills as well as the required resources that should be available to maintain good personal hygiene. The results are shown in Tables 32 and 33. The results portray pupils exhibited knowledge of skills, the

resources, and the time to perform good personal hygiene. This knowledge was necessary for the practice of proper hygiene in the schools and at home.

Table 32: Responses from pupils on ensuring proper personal hygiene

Behaviour	Activity/Skill	Resources	Times	Reasons
Clean body	bathing	water, soap, and sponge	morning, evening	remove dirt/ odour
Clean hands	hand washing	water, soap, napkin	before/after eating after defecation before feeding babies after playing after sweeping	remove dirt/ germs
Clean Fingernails	cutting it short	blade	when grown	prevent illness
	hand washing	water, soap	when dirty	
Clean clothes	washing	soap, water	when dirty	remove dirt/ odour
Clean teeth	brushing of teeth	chewing stick, tooth brush, tooth paste, water	morning/ evening	prevent foul odour; remove particles
Care of hair	shaving/	scissors, blade	when grown	prevent lice
	washing	water, soap money	morning, evening	prevent odour
	combing	comb	after bathing	

Source: Field survey, Otami (2019)

Table 33: Pupils' knowledge of personal hygiene behaviours

School type	Personal hygiene indicator					
	Yes		No		Total	
	Freq.	%	Freq.	%	Freq.	%
			Kept Hair			
WASH	94	72.9	35	27.1	129	100.0
Non-WASH	85	59.4	58	40.6	143	100.0
Total	179	65.8	93	34.2	272	100.0
			Lice in hair			
WASH	07	5.4	122	94.6	129	100.0
Non-WASH	40	28.0	103	72.0	143	100.0
Total	47	17.3	225	82.7	272	100.0
			Odour from body			
WASH	29	22.5	100	77.5	129	100.0
Non-WASH	35	24.5	108	75.5	143	100.0
Total	64	23.5	208	76.5	272	100.0
			Rashes on skin			
WASH	89	69.0	40	31.0	129	100.0
Non-WASH	95	66.4	48	33.6	143	100.0
Total	184	67.7	88	32.3	272	100.0
			Clean teeth			
WASH	87	67.4	42	32.6	129	100.0
Non-WASH	87	60.8	56	39.2	143	100.0
Total	174	54.8	98	36.0	272	100.0
			Particles in teeth			
WASH	25	19.4	104	80.6	129	100.0
Non-WASH	38	26.6	105	73.4	143	100.0
Total	63	23.2	209	76.8	272	100.0
			Odour from mouth			
WASH	18	14.0	111	86.0	129	100.0
Non-WASH	60	42.0	83	58.0	143	100.0
Total	78	28.7	194	71.3	272	100.0
			Dirty Uniform			
WASH	29	22.5	100	77.5	129	100.0
Non-WASH	83	58.0	60	42.0	143	100.0
Total	112	41.2	160	58.8	272	100.0

Source: Field survey, Otami (2019)

However, most pupils from non-WASH schools did not put the knowledge acquired into practice. This was because an observation of pupils' physical appearance, revealed most of them had odour in hair, rashes on skin; body odour, dirty school uniforms, odour in mouth, grown and dirty fingernails; particle in-between-teeth, and dirt in fingernails. These results confirmed Elfituri, Elmahaishi and MacDonald (1999) assertion that knowledge of information on WASH does not necessarily translate into practical application. They further maintain that such discrepancies occur when knowledge is held by individuals who are unable to express the information in behavioural terms. This was the problem associated with the agency theory's information asymmetry. A weakness associated with the agency theory (information asymmetry) which the BCC model off sets.

These findings, therefore, agrees with Van Wijk and Murre, (2003) who asserted that better knowledge does not, in many cases, lead to action and, thus, contest Bresee et al (2014) notion that health-related knowledge, values, skills and practices at school acquired by pupils make them empowered to pursue a healthy life for themselves, their families, peers and communities.

Pupils' knowledge of hand washing

Improper hand washing is perceived as a major cause of most hygiene-related diseases such as cholera and other diarrhoea infections (Kendie, 2002). Information on hand washing was measured by reporting of critical times and demonstration of techniques for good hand washing practices. During the FGDs, pupils from both school-types maintained that hand washing was very critical to human health as it was a way to rid their hands off germs which may

find their way into their bodies. The pupils further explained that when they defecate, faeces get on their fingers when they clean their anus, so when they do not wash their hands after defecating or before eating and they put their fingers in their mouth, they may end up eating faeces which may lead to contraction of diseases. Steps indicated by pupils for washing their hands and demonstration of how to wash hands in a chronological order are shown in Table 34.

Table 34: Pupils knowledge on hand washing techniques

Steps for hand washing	Duration	items needed	Times
Wet hands	20 seconds	clean water	before/after eating
Apply soap		soap	after playing
Rub palms together		paper tissue/	after defecating
Interlink fingers		towel	after sweeping
Cup fingers			
Rub palm with fingers			
Rinse hands			
Dry hands			

Source: Field survey, Otami (2019)

Normative practices of Water, Sanitation and Hygiene Behaviours of pupils and their families from both school-types

The normative WASH behaviours of school children and their families were examined. Pupils were during the FGDs asked to indicate:

i. some of the good and bad WASH behaviours of pupils, their families and community members

ii. when and how their family members perform the following hygiene behaviours (bathing, brushing of teeth, hand washing, washing of cloths, clean finger nails, hair; and

iii. what motivates them to perform such behaviours/

Safe and Unsafe Practices of Water supply, Sanitation and Hygiene Behaviours among Pupils and their Families

On the good and bad WASH behaviour practices, at school and at home, pupils from both school-types were asked during the FGDs to provide information regarding the normative WASH behaviours of their peers, families and their communities. Three key behaviours of WASH as indicated by UNICEF WASH in School (WinS) examined were: hand washing at key moments, defecating in a toilet and drinking clean water.

On drinking water practices, pupils from both school-types reported that safe and unsafe drinking water practices at home and in school. Among the safe practices were: fetching water from boreholes, hand dug wells, and storing water in containers with narrow-mouthed lids. The unsafe practices are sharing cups without cleaning them, drinking directly from taps, not purifying drinking water. The pupils indicated that the motivation for the practice of safe drinking water practices were mainly to prevent diseases or to make their drinking water was clean. According to them, the reasons why people practice unsafe drinking water practices were: ignorant of water treatment (boiling or sieving), perception that treating water is time consuming and waste of resources, long distance to water source, no proper storage containers, inadequate drinking cups and no proper place of storing water. The pupils further revealed that household members often left their storage vessels with

open wide lids (barrels, pots or buckets) in open spaces (outside) without covering them which could easily lead to contamination by rodents. Tables 35, 36, 37 and 38 show the various responses provided.

Table 35: Responses drinking water supply practices of pupils in both school-types and their families

Behaviour	School		Home	
Drinking water	safe	unsafe	safe	unsafe
	Use of personal cup	Sharing of cups	Boiling water	Leaving drinking water in open spaces
	Drinking water from borehole.	Drinking directly from tap	Fetch water from clean source	Not fetching water from good source
	Clean storage container frequently	Leaving drinking water in open space.	Cover water	Poor storage of water
		Do not clean storage container	Clean storage container daily	Do not clean storage container
Motivation	To prevent disease	Inadequate cups	To kill germs	No storage place
	To kill germs	There are no cups	To keep water clean	Long distance to water source
		No proper place of storing water		No proper storage container
				Payment for water use

Source: Field survey, Otami (2019)

The information on safe and unsafe WASH practices from homes and communities of pupils from both school-types indicated that they observed safe drinking water practices in school than at home. Pupils confirmed that teachers frequently monitored their WASH behaviour practices in schools than what parents do at home.

Defecation practices of pupils and their families

On defecation practices, pupils reported during the FGDs that the practice of safe methods such as latrine use, and dig and bury in school and at home were motivated by keeping the compound clean, preventing diseases and to prevent flies. Among the unsafe practices pupils from both school-types reported were defecating; on school compound, in the bush and at the refuse dump. They pointed out that long distance to latrine site, not enough latrines, and dilapidated and unhygienic state of latrines mostly forced pupils, especially younger ones, to practice open defecation.

Responses from FGDs with pupils from both school-types as shown in Table 41 indicate that the inability of household and community members to pay for use of public toilets as well as the lack of knowledge of good hygiene mainly forced people to practice unsafe hygiene behaviours. All the communities visited show drops of human and animal excreta around the market, lorry stations as well as on the path to the homes of some pupils in the communities. Queues were also seen at the public toilets. It appears the impact of information on WASH pupils from both school-types had gotten from school was not practiced in their communities.

Table 36: Responses on Defecating practices of pupils in both school-types and their families

Behaviour	**School**		**Home**	
Defecation	**safe**	**unsafe**	**safe**	**unsafe**
	Latrine use	Defecating on compound	Dig and bury	Defecation around the compound and bush
	Dig and bury		Latrine use	
Motivation	To prevent flies	No latrine at home	To prevent flies	No latrine use
	To prevent disease	Defecating on compound	To keep compound clean	Distance to latrine far
				Latrine not clean
	Keep compound clean	Do not use latrine	To prevent scent	Scent from latrine
		Lack of knowledge on good hygiene	To prevent disease	Payment for latrine use

Source: Field survey, Otami (2019)

Hand washing practices of pupils and their families in WASH and non-WASH schools

Responses by pupils from both school-types during the FGDs on hand washing practices is shown in Table 38. Pupils pointed out that, safe hand washing practices at school were washing hands under running water with soap and drying with a cloth or a paper towel. They further indicated that they wash their hands before and after: eating; defecating; playing; cleaning the black board and sweeping the compound. The motivation for practicing hand washing behaviours they indicated was to keep their hands clean. The unsafe hand washing practices pupils mentioned were washing hands; without soap, in a common basin, not washing hands after and before eating, after defecating; after playing; after cleaning the black board and after sweeping the compound. The pupils from both school-types observed that unsafe hand washing practices are as a result of unavailability of soap and hand washing facility, forgetfulness, and fear of being caught by teachers for defecation on school compound, inability to queue and wait for their turn at public toilets and long distance from place of convenience to home.

At home, pupils from both school-types indicated that their family members do not wash their hands at all critical times. Even if they do wash their hands, it was without soap. Pupils during the FGDs explained that family members do not wash their hands with soap before they eat though they are encouraged to do so. When asked why they do so, pupils further expressed that it is because family members feel that the smell of the soap might get into the food, so the food might not be tasty. However, the family members mostly washed their hands with soap after eating.

Table 37: Responses on Hand washing practices of pupils in both school-types and their families

Behaviour	School		Home	
Hand Washing	safe	unsafe	safe	unsafe
	Wash hands with soap and water	Do not wash hands with soap and water	Washing hands with soap, ash and water	Do not wash hands with soap, ash and water
	Wash hands with soap and water	Washing hands with only water	Wash hands with soap after defecating, before and after eating	Do no wash hands after defecating, before and after eating
	Wash hands under running water	Washing hands in a common bowl		
	Wash hands with water and soap before eating, and after defecation	Do not wash hands before eating and after defecation		
Motivation	To remove germs	No soap	To remove germs	No water and soap close to place of defecation
		Too hungry to eat	Prevent sickness	The taste the scent or smell of the soap in the food
		Forget to wash hands	Taught in school	Inability to buy soap
		Fear of being punished by teachers after defecation openly		
		Impatience for others to finish		

Source: Field survey, Otami (2019)

This practice was observed in most of the household visited. Even if soap was available, household members did not use it when washing their hands to eat. The findings resonate with Rivers and Aggleton (1993) who argued that if information pupils give to their households and communities do not relate to their experiences it is difficult to change such norms. Lack of hand washing facilities at all public latrines which made it impossible for people to wash their hands immediately after defecating was a concern to pupils from both school-types. During the FGDs pupils from WASH school were of the opinion that since the distance from most homes to the place of convenience was far, people most of the time forgot to wash their hands even when they come home. Such people might have greeted a lot of people through hand shake before they got home.

Pupils from both school-types during the FGDs were further shown a picture on some bad WASH behaviour practices, (adopted from Bresee et al (2014)), (see Figure 18), to identify and explain what they see. They were required to indicate whether such behaviours occur in their communities; indicate the health risks associated with them; whether such behaviours were hygienic or not; give reasons why people practiced such behaviours; and if they are unhygienic, indicate ways they could be curbed. Pupils indicated all the behaviours in the picture happen in their communities. When asked whether such behaviours were hygienic practices, pupils responded negatively. They acknowledged that such behaviours were unhygienic. They further expressed disappointment toward such practices based on their knowledge on the adverse effect these unhygienic practices could bring to them and others. Pupils mentioned that defecating either at river side or the refuse dump or in

the bush could contaminate their sources of drinking water which could lead to spread of water-related diseases such as diarrhoea. Pupils' responses are presented in Table 39.

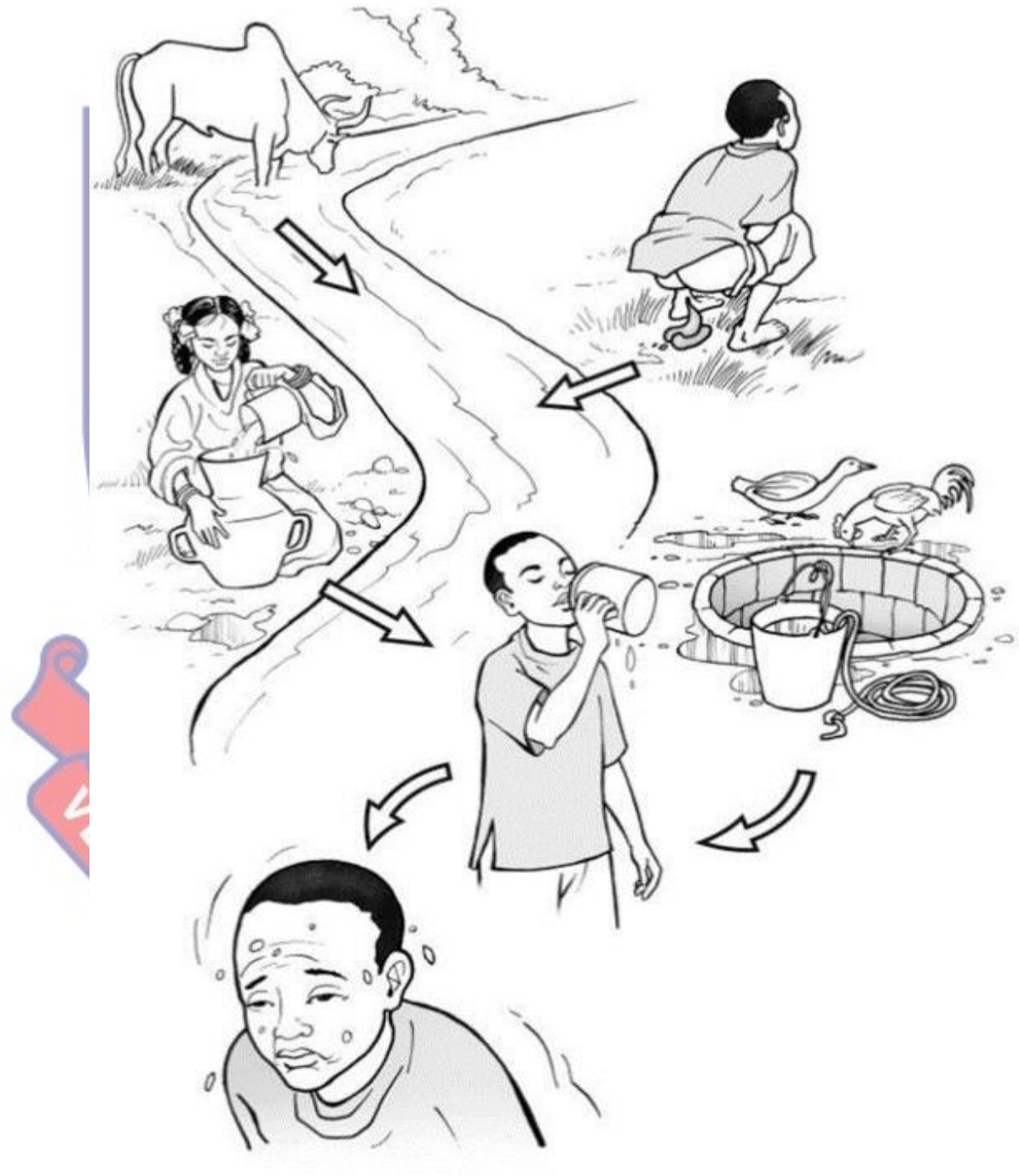


Figure 18: A picture on some WASH practices in a community

Source: Adapted from Bresee et al (2014)

Table 38: Responses on unhygienic WASH practices at home and in their communities

Identified WASH activity in picture	Identified behaviour	Existence	Health risk	Solution
A cow drinking water from the same river	Pollution of drinking water	Yes	Get sick (diarrhoea)	Fetch water for animals to drink
A boy defecating near a river source	open defecation	Yes	Get sick (diarrhoea)	stop open defecation/ practice hand washing
A woman fetching water from the polluted river	fetching polluted water	Yes	Get sick (diarrhoea)	treat drinking water from source
A duck and a cock moving round an uncovered well	Pollution of drinking water	Yes	Get sick (diarrhoea)	Cover hand dug wells
A boy drinking water fetched by the woman or from the uncovered well	Drinking untreated water	Yes	Get sick (diarrhoea)	treat drinking water from source
A boy looks sick	Drinking untreated water and refusing to wash hands after defecating	Yes	Get sick (diarrhoea)	treat drinking water and practice hand washing

Source: Field survey, Otami (2019)

On how unhygienic behaviours could be curbed in their communities, pupils indicated that it was important to fetch water for animals to drink rather than allowing them to drink directly from the river source. They further suggested that open defecation could be solved by educating people on the dangers associated with it and be encouraged to build private or public latrines. They also noted the need to cover water sources, and treat drinking water supply before use.

Summary

Information from analysis of research objective three bring to the fore pupils' knowledge of ensuring good WASH behaviour practices, the interconnectedness between sanitation, hygiene and clean water supply, as well as the various routes through which pathogens from faeces could get to human beings as noted in the "F Diagram" (Brockett, et al 2019; Kendie, 2002, p12). Again, pupils from both school-types exhibited their understanding of the need to ensure good drinking water, proper sanitation and hygiene practices at school and at home. This finding resonates with that of Kinicki & Kreitner (2008) who argued that acquiring the necessary information and understanding the need to ensure good behaviour practices is crucial in motivating school children to act as agents of change to such behaviour practices. As it shown in the conceptual framework, the acquisition of knowledge on WASH is a fundamental precondition for pupils to act as agents of WASH behaviour change. This is because agents strive on knowledge to impact change in behaviours. This suggests pupils from WASH and non-WASH schools in the Asikuma-Odoben-Brakwa district have requisite information which could be passed to their families and peers.

CHAPTER SEVEN

COMMUNICATING WASH INFORMATION TO HOUSEHOLD MEMBERS

Introduction

This chapter examines how pupils from WASH and non-WASH schools communicate WASH information learned at school to families as well as the challenges they face in doing so. To do this, the sources of WASH information to families; the nature of WASH information received, the frequency of communicating WASH information by pupils to their families; methods used by pupils in communicating WASH information; and how often families received the information were examined.

Sources of WASH Information to Households of Pupils

Household heads of pupils from WASH and non-WASH schools were asked to indicate where they receive WASH information. The results as shown Table 39 revealed that household heads of pupils from both school-types got WASH information mainly through their children. However, whereas most 64(44.7%) of household heads of pupils in the non-WASH schools received WASH information from the media (i.e. radio and television), most 61(47.4%) of those whose children were in WASH schools received their information from their children. Other sources of WASH information identified by household heads were through health workers 67(24.6%), media 94(34.6%), and Parents Teachers Association meetings 13(4.8).

Table 39: Sources of WASH information to households of pupils from both school-types

School Type	Sources of information									
	Health workers		School children		Media		PTA		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
WASH	30	23.2	61	47.4	30	23.2	8	6.2	129	100.0
Non WASH	37	25.9	37	25.9	64	44.7	5	3.5	143	100.0
Total	67	24.6	98	36.0	94	34.6	13	4.8	272	100.0

Source: Field survey, Otami (2019)

This confirms the findings by Bresee at al (2014) that apart from health workers, the media and the traditional leaders, guardians received trusted information from children.

Frequency of receiving WASH information by household from source

Household heads of pupils from both school-types were asked how often they obtained WASH information from their sources. From Table 40, most 126(46.3%) of the respondents of pupils from both school-types receive WASH information from sources daily, whereas 35(12.9%) reported that they received WASH information termly. About 69(70.4%) of household heads received WASH information from school children daily, with 40(42.6%) and 17(25.2%) also receiving daily information on WASH from the media and health workers respectively. A daily interaction on WASH practices by school children with parents may not cause parents to forget most of the information received.

Table 40: Frequency of receiving WASH information by households from source

Source of Information	Frequency									
	Daily		Weekly		Monthly		Termly		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Health workers	17	25.4	20	29.8	17	25.4	13	19.4	67	100.0
Media	40	42.6	31	33.0	16	17.0	7	7.4	94	100.0
School children	69	70.4	18	18.4	7	7.1	4	4.1	98	100.0
PTA	0	0.0	0	0.0	2	15.4	11	84.6	13	100.0
Total	126	46.3	69	25.4	42	15.4	35	12.9	272	100.0

Source: Field survey, Otami (2019)

Nature of WASH information received by household heads from source

Household heads of pupils from both school-types were further asked to indicate the nature of WASH information communicated to them. Majority 208(76.5%) of household heads of pupils from both school-types reported hand washing; 30(11.0%) personal hygiene; with only 19(7.0%) and 15(5.5%) reporting good drinking water and sanitation respectively. The responses showed that sanitation information was least given by children to their parents.

Table 41: Nature of WASH information received by household from source

School type	Sources									
	Hand washing		Sanitation		Personal hygiene		Drinking water		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq	%
WASH	99	76.7	6	4.8	17	13.1	7	5.4	129	100.0
Non-WASH	109	76.2	9	6.3	13	9.1	12	8.4	143	100.0
Total	208	76.5	15	5.5	30	11.0	19	7.0	272	100.0

Source: Field survey, Otami (2019)

This finding resonates with that of Fawtrell and Colford, (2005) when they opined that sanitation issues were mostly discussed and evaluated as part of a package of different interventions rather than alone. This could be the reason why it was least discussed by children to their families. Considering the importance of safe disposal of faeces as a primary barrier to transmission of faecal pollution than any other WASH behaviour practice as noted in the F-diagram, sanitation behaviours should have been given much attention (Adinkra Amo, 2007). The high percentage of responses for information on handwashing given by children to parents is commendable as the practice of handwashing is considered barrier to many faecal infections (Brockett, et al., 2019; Kendie, 2002). This could be as a result of handwashing being made a routine in the inculcating of WASH behaviours in pupils.

Frequency of communicating WASH information to households by pupils

On the number of times pupils from both school–types communicate WASH information to families, majority 209(76.8%) of household heads

reported they received the information daily from their children. About 32(11.8%) and 31(11.4%) also indicated that they received WASH information from their children, 'weekly' and 'when necessary', respectively as presented in Table 42.

Table 42: Frequency of communicating WASH information to households by pupils from both school-types

School Type	Frequency							
	Daily		weekly		when necessary		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
WASH	95	73.6	21	16.3	13	10.1	129	100.0
Non-WASH	114	79.7	11	7.7	18	12.6	143	100.0
Total	209	76.8	32	11.8	31	11.4	272	100.0

Source: Field survey, Otami (2019)

The daily conversation pupils have with their families on WASH is an indication that they sent information learnt at school to families. This confirms Bresee et al (2014) observation that schoolchildren were regular communicators of WASH information to parents.

Reasons for households' receptiveness to WASH information from pupils

Household heads of pupils from both school-types were asked why they received information communicated to them by their children on WASH behaviour practices. The responses are presented in Table 43.

Table 43: Reasons for household receptiveness to WASH information given from pupils in both school-types

School Type	Reasons					
	From teachers because we trust them		Confirmation to what we already know		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	85	65.9	44	34.1	129	100.0
Non-WASH	105	73.4	38	26.6	143	100.0
Total	190	69.9	82	30.1	272	100.0

Source: Field survey, Otami (2019)

From Table 43, majority 190(69.9%) of the respondents reported that the reason for accepting WASH information given to them by their children was because it came from their teachers who they trust. Furthermore, 82(30.1%) of the household heads indicated that the information given to them was what they already know from other sources.

The finding that the WASH information from pupils to their families were received and trusted by their parents because it came from their teachers resonates well with that of Mwanga et al (2008) who found that parents mostly trusted messages from their children in school because they perceived it came from their teachers who are seen to be carriers of trusted information. The belief that information from teachers was right and should be trusted could be attributed to the way communities held teachers in respect and in trust as the custodian of knowledge. Hence, Willgoose's (1974) observation that health personnel needed assistance of teachers to pass WASH-related issues to

students and their communities seem to be what will obtain in AOB district (Ampeh, 2008).

Methods used in communicating WASH information to households by pupils in both school-type

From Table 44, pupils from both school-types indicated WASH information was communicated to their household members mainly by practising 125(46.0%) the behaviours they learned in school. Only 24(8.8%) reported that they discussed WASH information with their household members. Such actions employed by household heads were required to help pupils feel comfortable to interact with them on WASH issues.

Table 44: Methods used in communicating WASH information to households by pupils in WASH and non-WASH schools

School type	Methods used in communicating WASH information									
	Discussing		Reminding		Teaching		Practising		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
WASH	10	7.8	26	20.2	36	27.9	57	49.2	129	100.0
Non-WASH	14	9.8	22	15.4	39	27.3	68	47.6	143	100.0
Total	24	8.8	48	17.6	75	27.6	125	46.0	272	100.0

Source: Field survey, Otami (2019)

Pupils from both school-types further indicated during the FGDs that their household members trusted the information given to them. When asked how they knew their information was trusted, they responded by indicating that members of their households practiced what they communicate to them.

Motivation to Pupils' roles as agents of WASH Behaviour Change Practices

According to Pridmore and Stephens (2000) and Lansdown (2001), cultural norms for parent-child communication influence information transfer. The authors argued that in some families, children are expected to listen to adults as opposed to engaging as active communicators. Even if health messages are transferred to children who have the confidence to share that knowledge, they needed parental encouragement and support for them to serve as agents of change. Pupils from both school-types were asked about their ability to influence their families' WASH behaviour practices. Pupils' responses as shown in Table 45 indicate that they were confident given the chance they would be able to influence their household WASH behaviours. These responses resonate with Hart (2008) who opined that building of confidence is critical to children's empowerment and participation.

Table 45: Motivation to pupils' role as agents of change in WASH behaviour practices

School Type	Reasons					
	Knowledge acquired		Desire to change family WASH		Total	
	Freq.	%	Freq.	%	Freq.	%
WASH	88	46.3	41	50.0	129	100.0
Non-WASH	102	53.7	41	50.0	143	100.0
Total	190	69.9	82	30.1	272	100.0

Source: Field survey, Otami (2019)

From Table 45, majority 190(69.9%) reported that they could influence the WASH behaviours of their families because of the knowledge acquired, whereas 82(30.1%) indicated that they desire to change family WASH

behaviours. Pupils further expressed the view during the FGDs that since they have been taught about WASH behaviours in school, they were fully aware of the effects and how to maintain good WASH behaviours. Therefore, they could boldly speak to people and teach them to practice good WASH behaviours. Pupils expressed the view that as members of the School WASH Club, they have been embarking on community and house-to-house sensitisation campaign on the need to drink good water; use the latrine and wash their hands at critical times because they are aware of the dangers associated with poor hygiene.

Similar responses were shared by other WASH club members in the WASH schools. This suggests that, being knowledgeable in WASH ensures confidence in teaching other people. Since the pupils acquire their knowledge from teachers who are respected and trusted by members of the communities, it could be easy for them to communicate WASH information to their families.

The desire to change family WASH behaviour practices was evident during the FGDs from pupils in WASH schools. Pupils from WASH schools especially expressed their desire to teach their families as well as the community to understand the need to maintain good hygiene and cleanliness in order to protect them from sickness. The pupils further noted that the sensitisation programmes they embarked on after school stemmed from the fact that they wanted their family members and the community as a whole to know about WASH and prevent them from getting avoidable illness. Pupils further expressed the views that it behoves on them as members of the School Health Club to teach our peers, siblings and family members to be aware of what they need to do otherwise they will all contract diseases. This response

suggests that pupils were aware of the effect of poor WASH behaviour practices not only on one person but to all.

Barriers to pupils' roles as agents of WASH behaviour change practices

Challenges pupils go through as agents of WASH behaviours change are provided in Table 46.

Table 46: Barriers to pupils' role as agents of WASH behaviour change practices

School Type	Barriers							
	Inexperienced		lack of WASH Facility		Doubtful		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
WASH	61	47.3	59	45.7	9	7.0	129	100.0
Non-WASH	100	69.9	37	25.9	6	4.2	143	100.0
Total	161	59.2	96	35.3	15	5.5	272	100.0

Source: Field survey, Otami (2019)

From Table 46, whereas majority 161(59.2%) of pupils from both school-types pointed out that household members perceived them as inexperienced, 96(35.3%) mentioned lack of WASH facilities in the community, with 15(5.5%) also reporting that some family members doubt the message they bring home.

The perception of household members about pupils as inexperienced, is what James and Prout (1997) have argued that it could defeat school children's role as agents of change as they could lose their confidence and not believe in their competencies and capabilities of helping their families to learn about WASH. This could weaken the bidirectional relationship in using

children as agents of change in WASH behaviour practices. Percy-Smith and Burns (2013) therefore, noted that lack of adults' recognition of children's competencies is a barrier to their taking active roles as agents of behaviour change dovetails into what obtains at the Asikuma-Odoben-Brakwa District.

Pupils who mentioned lack of WASH facilities as a reason for the challenges to exercise their agency explained during the FGDs that since the conditions at schools were different from home, it was always difficult for family members to conceptualise and practice what they (pupils) teach them to do. Comparing the school situation to that of the home, pupils during the FGDs indicated that telling siblings to wash their hands with soap when there is no soap in the house or asking them to use the toilet when there is no latrine becomes difficult. In addition to this, some pupils revealed that it is impossible for their parents to acquire or build WASH facility for the home. They explained that their parents are mostly peasant farmers, and therefore cannot afford to put up such structures. This suggests that once there is the absence or lack of WASH facility (enabling environment) the motivation for pupils to exercise their agency, becomes a great challenge to them. The findings confirm Miller and Rollnick (2013) when he argued that behaviour change is often linked to an individual's personal motivation, and resources needed in the change process. As has been shown in the conceptual framework, resources (enabling factors) are the medium through which agency is exercised, and their role to behaviour change cannot be overlooked.

Summary

Analysis on how school children communicate WASH information learnt at school to their household members indicates that, without much

difficulty, household members willingly listen to information as it is believed it was gotten from trusted source. This is because communication and trust as explained in the BCC model and the conceptual framework, are preconditions to all actors in their roles to ensuring proper WASH behaviour change. However, the attitude of some adults as well as absence of WASH facilities hinder children's role as agents of WASH behaviours. Such a situation, may impede the success of the entire system as noted in the conceptual framework.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

In this concluding chapter, the most important findings are highlighted, and generalisations offered with the hope of drawing attention to critical issues for curriculum developers, the Ministry of Education, the Ghana Education Service, parents and community members on WASH. Hence, the study aimed at gaining insights into the extent to which School Health Education Programme could prepare school children for a healthy living, and put them at the centre as advocates for WASH behaviour change in their homes and communities. To achieve this, school children's WASH behaviour change practices were assessed in WASH and non-WASH Primary Schools in the Asikuma-Odoben-Brakwa District in the Central Region.

Descriptive as well as explanatory information on the facets of WASH behaviour; the role teachers' play in influencing pupils' behaviour; pupils' knowledge of the various components of WASH; how pupils communicate WASH information to their household members; and the challenges they face in serving as agents of change in WASH were comprehensively explored.

Both quantitative and qualitative approaches were employed to obtain data and analysed, to gain insights into WASH behaviour change practices. For the quantitative part, pupils' knowledge of the components of WASH, teachers' views on their roles in influencing pupils' WASH behaviours as well as how pupils communicate WASH information to household heads were gathered using a survey. Qualitative information on the other hand, were obtained through focus group discussions, individual interviews and

observations to enable the views expressed on WASH behaviour change that emerged from the survey to be triangulated.

Key findings of the study

WASH behaviour activities in the Primary school curriculum

The study revealed that the primary school curriculum provided information on how pupils could maintain proper personal hygiene, good sanitation and good drinking water supply. The study further revealed that WASH schools had developed action plans which served as a guide to inculcate proper WASH behaviours into pupils which paralleled what obtained in non-WASH schools.

Furthermore, the study found that WASH schools had instituted school-based Health Clubs which helped in disseminating WASH information to pupils, families and their communities. Again, the study revealed that WASH schools had adequate and functional WASH facilities and additional learning materials compared with the non-WASH.

Role teachers play in influencing pupils' WASH behaviour change practices

The outcome of the study showed that teachers from both school-types communicated WASH information to pupils at school gatherings It was again found based on the outcome of this study that teachers themselves practiced good WASH behaviours. However, it was found that teachers from both school-types did not receive any formal training on WASH during their pre-service professional training.

Pupils' knowledge and practices of WASH behaviour

The study revealed that pupils from both school-types had knowledge on WASH behaviour as well as the interconnectedness of the behaviours.

However, differences existed in the knowledge of what constitute improved water supply and how to keep the environment clean this was in favour of the WASH schools. The outcome of the study revealed that pupils in the WASH schools practiced WASH behaviours compared with the non-WASH.

Communicating information on WASH learned at school to family members

The study found that pupils from the WASH schools served as the major source of WASH information which was trusted by their families whereas families of pupils from non-WASH schools got their information from the media. The mode of communicating WASH information by pupils of both school-types to their families was via practicing.

Barriers to pupils as agents of WASH behaviour change

The study found that lack of WASH facilities in the homes of the pupils as well being tagged inexperienced hindered the pupils in serving as effective agents of change in WASH behaviour practices.

Conclusions

WASH behaviour activities in the Primary school curriculum

The Curriculum for Primary Schools provided by GES had information on WASH behaviours such as personal hygiene, proper sanitation and improved drinking water supply. However, the information in the curriculum on WASH does not cover activities that are to be carried by pupils to ensure proper WASH behaviours. The WASH facilities in WASH schools were comparatively better than the non-WASH schools. Therefore, pupils in the WASH schools had adequate information on WASH as compared to the non-WASH schools. Resources, according to the agency theory, are the structured properties of a social system taken and improved by individuals in the

institution during their course of interactions. Therefore, resources are considered the foundation through which agents can be empowered through the acquisition of sufficient knowledge, values and skills on WASH behaviours to motivate pupils to act as agents of change. Since pupils in the WASH schools have access to better resources, a precondition for agents, than the non-WASH schools, they are better placed as agents of WASH behaviours.

The ability of the WASH schools to develop extracurricular activities on WASH such as formation of school health clubs, development of action plans and organisation of games to ensure that pupils do not only practice proper WASH behaviours but also, are giving opportunities (enabling environment) to make their own choices and use their capabilities. Such a situation resonates with the agency theory and the BCC model. These made pupils in the WASH schools better placed as agents of WASH behaviour change compared to those in the non-WASH schools.

Role teachers play to influence pupils' WASH behaviour change practices

Teachers did not receive any formal pre-service training on WASH and hence could not be seen as possessing adequate knowledge critical to their role as influencer to WASH behaviours. This situation might impede the potential of children in serving as agents of change in WASH behaviours as indicated in the conceptual framework. In spite of this, the strategies adopted by teachers especially those in WASH schools, in acting as role models, instituting award schemes, and games, to ensure proper WASH behaviours are important to place pupils as agents of change in their communities.

Pupils' knowledge and practices of WASH behaviour

Pupils' knowledge of proper WASH behaviours and its interconnectedness puts them in a potential position as agents of change. This is because knowledge, as seen by both agency theory and he BCC model, is the pivot around which agents acquire training and skills to put the acquired information into practices and impact others.

However, the failure of some pupils especially those from the non-WASH schools to put knowledge on WASH behaviours acquired into practice created informational asymmetry. This makes, pupils in non-WASH schools not better placed to serve as agents of WASH behaviours.

Communicating information on WASH learned at school to family members

Teachers, seen as the principals of agency, were trusted sources of WASH information. This is because parents and community members viewed the information pupils provided on WASH behaviours were from the school. Since teachers were considered as trusted source of WASH information, they are to possess adequate knowledge on WASH information so as to be able to teach and influence pupils on the right WASH behaviour practices. The acceptance of WASH information by families disseminated by pupils could serve as a motivating factor for the pupils to act as agents of change. From the conceptual framework, one of the preconditions expected from family members is to interact with pupils, to get adequate information from them in other to practice proper WASH behaviours. However, since the information households receive is mostly on handwashing to the detriment of other WASH behaviours, the practice of good WASH behaviours among families will only

be inadequate, hence the interconnectedness the three behaviours water supply, sanitation and hygiene would not be pronounced.

Barriers to pupils as agents of WASH behaviour change

Both the agency theory and the BCC model view resources as crucial to the role of agents to effect change. Availability and accessibility to resources as discussed under enabling and reinforcing factors in the conceptual framework does not only act as a motivating factor for actors in the framework to practice proper WASH behaviours but also a way of boosting pupils' confidence in the information they give to their households. Therefore, the lack of WASH facilities in pupils' homes is a barrier to their role as agents.

Furthermore, the long-held perception of adults about children as inexperienced might become difficult for easy interaction between them. Trusting and acknowledging the capability of children by adults which are preconditions pave way for good communication between actors. Though adults are receptive to children's messages from school because they trust the source, it is important that adults trust and have confidence in pupils who are messengers of information. Despite these challenges, pupils still believed that the knowledge on WASH acquired from school as well as the desire to change family WASH behaviours motivate them to be agents of WASH behaviour change in their households and communities. It is generally concluded based the findings of this study that school children in the Asikuma-Odoben-Brakwa District have the potential to serve as agents of WASH behaviour change practices.

Recommendations

In the light of the conclusions, the following recommendations are offered:

The MoE should ensure that pre-service teachers are trained on WASH as part of their programme of study. This would equip teachers with adequate knowledge on WASH to enable them teach their pupils. The GES should work in collaboration with the National Teaching Council (NTC), the National Council for Curriculum and Assessment (NaCCA) and other stakeholders in WASH such as UNICEF to develop WASH materials and organise frequent in-service training for teachers, to keep them abreast of current issues on WASH. Efforts should be made by the GES to improve the WASH environment in public basic schools by ensuring that facilities are available and accessible to enhance WASH behaviour practices. Special attention should be paid to non-WASH schools which usually lack WASH materials and facilities to ensure effective teaching, learning and practicing of WASH behaviours in schools. This would ensure that the school and community become a child friendly environment. This approach would help motivate and boost the confidence of pupils to share the knowledge acquired from school on WASH at home.

District Directors of Education should ensure that lesson periods for WASH practical activities are officially allocated on the timetable in schools. Teachers must be encouraged to use them to conduct practical WASH activities for their students. More importantly, teachers' supervision of WASH practical activities must be monitored to ensure that students are given the needed exposure to WASH practices.

Heads of Basic Schools should develop and implement action plans on WASH behaviour activities. This must be done in consultation with the District SHEP coordinators and in collaboration with Health Club members to ensure their participation. This would give pupils the confidence to own and ensure that all pupils adhere to such plans. Furthermore, Heads of Basic Schools should form or revive School Health Clubs in their schools. The existence of School Health Clubs may help place pupils in a better position to promote good WASH behaviours as well as disseminate WASH information to their families.

Teachers should engage pupils with action-oriented knowledge on WASH such as regular body inspection and good grooming. By so doing, pupils could put their knowledge of good personal hygiene behaviours into practice. Heads of schools must create avenues during open days, community engagements, and School Performance and Appraisal Meetings (SPAM), for pupils to demonstrate and share information acquired on WASH from school to parents. In this way parents would fully acknowledge the knowledge and competence level of their children in WASH and embrace the information they give to them from school. This would also motivate pupils to confidently correct and share WASH information to their families.

Contribution to knowledge

This study investigated how school children could serve as agents of WASH behaviour change practices in the Asikuma-Odoben-Brakwa District of the Central Region of Ghana. Since no study has combined the Agency theory and the BCC model in the Ghanaian context, combining them in this study broadens the knowledge, understanding and application of operations of

these theories in using children as agents of change in WASH behaviour practices.

Thus, the Agency theory delved into the relationship and responsibilities of the various actors; items needed for their actions whereas the BCC model explained the conditions and the communication channel to be employed by the actors to ensure proper WASH behaviour change practices.

Studies that have explored school children's influence on WASH behaviour practices focused on one of the WASH behaviours at a time. None of the earlier works combined the WASH behaviours and looked at them with the lenses of the Agency theory and the BCC model in a single study. The study went beyond the arguments in the literature about the participation of children in WASH practices and the fact that their involvement empowers them to influence the WASH behaviour practices of their families.

Suggestions for Further Research

The study explored how school children could serve as agents of WASH behaviour change practices in the AOB District of the Central Region of Ghana. The study, however, did not look at the change in WASH behaviours in the households of the children(agents). It is, therefore, suggested that future studies employ participant observation to obtain information on the changes in the WASH behaviours that occur in the households of the agents. Also, it suggested that factor analysis is employed to ascertain the key factors impacting school children as agents of change from the school environment to the home setting for policy purpose.

REFERENCES

Adams, Q. (2012). *Investigation of I-WASH's community-led total sanitation and alternative decentralized sanitation models in rural Ghana*. Unpublished master's thesis, Massachusetts Institute of Technology, Cambridge, USA.

Adams, B. N., & Sydie, R. A. (2001). *Sociological theory*. California, CA: Pine Forge Press.

Adelman, H. & Taylor, L. (2011). Expanding school improvement policy to better address barriers to learning and integrate public health concerns. *Policy Futures in Education*, 9: 431–436

Adinkra-Amo, K. (2007). *Assessing mothers' knowledge of prevention of diarrhoeal diseases among children under five years in AhafoAno South District of Ghana.* Unpublished master's thesis, Department of Community Health, Kwame Nkrumah University of Science and Technology, Kumasi.

Aduku, J. M. (n.d.). *An assessment of the attitude of SHS Students towards Environmental Sanitation in Ghana: A Case of Some Selected SHSs within the Greater Accra Region.* Unpublished master's thesis, Department of Education, University of Education. Winneba.

Adu-Mireku, S. (2013). Schools and health: A district level evaluation of school health education Ghana. *Journal of Social Development in Africa*, Vol. 18 No. 2, pp. 105-120

Aguilera, R. V., & Jackson, G. (2010). Comparative and international corporate governance. *Academy of Management Journal*, *4*(1), 485-556.

Alanen, L. (1988). Rethinking childhood. *Actasociologica, 31*(1), 53-67.

Al Bashtawy, M. (2015). Personal hygiene in school children aged 6-12 years in Jordan. *British Journal of Nursing School*. 10, 395-403.

Alchian, A, A., & Demsetz, H. (1972). Production, information costs, and economic organization. *American Economic Review*, 62 (777-795).

Alello A. E., Coulborn, R. M., Perez, V., & Larson, E. L., (2008) Effect of hand hygiene on infectious disease risk in the community setting: a meta-analysis. *America Journal of Public Health*. 98, 372-1381

Ampeh, C. A. (2008). *Evaluation of the school health education programme for the period 2001 – 2006 in the Bosomtwe-AtwimaKwanwoma District*. Unpublished master's thesis, Department of Community Health, Kwame Nkrumah University of Science and Technology, Kumasi.

Anamuah-Mensah, J. (2004). *The destiny of the Ghanaian child choices sacrifices, decisions and action.* A paper presented at Easter school for children, Mfantsipim School, Cape Coast.

Ansell, N. (2005). *Children, youth and development*. Abingdon: Routledge.

Appiah-Brempong, E., Harris, M. J., Nwton S., (2018). *A framework for designing hand hygiene educational interventions in school*. Denmark: DEFF Research Database.

Archard D. (2003). *Children, family and the state*. Aldershot: Ashgate Publishing Limited.

Arthur, W. E. (2014). *Microbiological quality of water in handwashing bowls in basic schools in the Ablekuma South Sub- metropolis of Accra, Ghana.* Unpublished master's thesis, Department of Theoretical and

Applied Biology, Kwame Nkrumah University of Science and Technology, Kumasi.

Assefa, M., & Kumie, A. (2014). Assessment of factors influencing hygiene behaviour among school children in Mereb-Leke District, Northern Ethiopia: A cross-sectional study. *BMC Public Health*, 14(1) 2-8. Retrieved from http:/?www.biomedcentral.com/1471-2458/14/1000

Ayi, I., D., Nonaka, J. K., Adjovu, S., Hanafusa, M., Jimba, K. M., Bosompem, T., Mizoue, T., Takeuchi, D.,Boakye, A., & Kobayashi, J., (2010). School-based participatory health education for malaria control in Ghana: Engaging children as health messengers. *Malaria Journal* 9(1)1-12. Retrieved from https://www.malariajournal.com/content/pdf/1475-2875-9-98.pdf

Ayodeji, M. A., (2015). Role perception of public primary school teachers regarding the school health program in Oyo State, south-western Nigeria: a rural–urban comparative study, *Journal of Public Health*, 23(3) 175–180.

Babbie, E. (2005). *The basics of social research* (3rd ed.). Canada: Thomson Wadsworth.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A., (2001). Social cognitive theory: An agentic perspective, *Annual Review of Psychology*. 5 (2), 1-26. Retrieved from https://doi/org/10.1146/annurev.psy.52.1.1

Barker, C. (2005). *Cultural studies: Theory and practice*. London: Sage.

Bartram, J. & Hunter, P. (2015). Bradley Classification of disease transmission routes for water-related hazards. In Bartram, J., with Baum, R., Coclanis, P.A., Gute, D.M., Kay, D., McFadyen, S., Pond, K., Robertson, W. and Rouse, M.J. (eds) *Routledge Handbook of Water and Health*. London and New York: Routledge.

Batuga, E. S. (2013). Public education on CWSA legislative instrument (LI, 2007) takes off in Ashanti Region. *Rural WASH Bulletin. The official Newsletter of community water and sanitation agency (CWSA)*, 2, 4-8.

Bell, M. (2011). *Promoting children's right in social work and social care: A guide to participatory practice*. Jessica Kingsley Publishers

Bennell, P. (2002). Hitting the target; doubling primary school enrolments in sub-Saharan Africa by 2015. *World Development*, 30(7): 1179-1194.

Biran, A., Tabyshalieva, A., & Salmorbekova, Z. (2005). Formative research for hygiene promotion in Kyrgyzstan. *Health Policy Plan*, 20(4), 213–221.

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*. Delft, Netherlands: International Water and Sanitation Centre, IRC.

Bourdieu, P. (1979). *Distinction*: *A social critique of the judgement of taste*. Cambridge: Harvard University Press

Bourdieu, P. (1995). *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Bowlby, J. (1969). *Attachment and loss, Vol. 1: Attachment.* New York: Basic Books.

Borkowski, N. A. (2015). *Organizational behaviour in health care*. (2nd ed.) Massachusetts: Jones & Bartlett Learning

Boyden, J. (1997). Childhood and the policy makers: A comparative perspective on the globalization of childhood. *Constructing and reconstructing childhood: Contemporary Issues in the Sociological Study of Childhood*, *2*, 190-229.

Bresee, S., Lupele, J., Caruso, B., Fry, S., & Freeman, M., (2014). *Exploring the potential of schoolchildren as change agents in the context of school WASH in rural Zambia*. 4, Lusaka, Zambia: USAID

Brockett, S., Wolfe, M. K., Hamot, A., Appiah, G. D., Mintz, E. D., & Lantogne, D., (2019). Associations among water, sanitation, and hygiene, and food exposures and typhoid fever in case control studies: A systematic review and meta-analysis. *The American Journal of Tropical Medicine and Hygiene*. 103 (3), 1020–1031.

Bryman, A. (1988). *Quantity and Quality in Social Research: Contemporary Social Research Series 18.* London: Unwin Hyman Ltd.

Catholic Relief Service & Ghana Education Service. (2009). *How-to Guide Series Child-led School Health Education Programs.* Accra: Catholic Relief Services.

Chambers, R., (2007). Involving children and young people in how healthcare is organised in R. Chambers and K. Licence, (eds) *Looking after children in primary care*. Oxford: Redcliffe Publishing,

Christensen, P. (2004). Children's participation in ethnographic research: Issues of power and representation. *Children and Society*, 18(2), 165-176.

Cohen, L. & Manion, L. (1994). *Research Methods in Education* (4th ed.). London: Routledge.

Concise Oxford English Dictionary (2011). (12th ed.). Oxford University Press. United Kingdom

Connor, P. E., & Lake, L. K., (1988). *Managing organisational change*. (3rd ed.). Michigan: Praeger.

Craib, I., (1992) *Modern Social Theory - Structuration theory: There is such a thing as society, there is no such thing as society* (2nd ed.). London: Routledge

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Upper Saddle River, NJ: Merrill.

Creswell, J. W., & Clark, P. V.L., (2011). *Designing and Conducting Mixed Methods Research*. (2nd ed.). Los Angeles: Sage Publications.

Curtis, V. A., Danquah, L. A., & Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: An eleven-country review. *Health Education Research*. 24(4), 655–673. Retrieved from https://www.researchgate.net/publication/24201434_Planned_motivated_and_habitual_hygiene_behaviour_An_eleven_country_review/link/5436872c0cf2bf1f1f2bd81f/download

Davis, J., Garvey, G. & Wood, M. (1993). *Developing and managing community water supplies.* Oxfam Development Guidelines. 8, 178, Oxfam, Oxford: UK.

Davis, J., (2007). Climate change and its impact on young children. *In Early childhood in Australia*. 13(4), 6-7.

Dangour, A. D., Watson, L., Cumming, O., Boisson, S., Che, Y., Velleman, Y., Cavill, S., Allen, E., and Uauy, R. (2013), Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children (Review). *The Cochrane Library,* 8, John Wiley & Sons.

Deegan, C. (2009). *Financial accounting theory*. (3rd ed.). Australia: McGraw Hill.

Deepthi, R., Kumar, S. J., Kamath, B. T., & Rajeshwaric, H. (2014). Participatory school health education on vector-borne diseases: Engaging children as change agents. *International Journal of Health Promotion and Education*, 52(2), 68-77.

Driskel, D., (2002). *Creating better cities with children and youth: A manual for participation*. London: Routledge.

Donaldson L. (1990). The ethereal hand: Organizational economics and management theory. *Academic Management Review*, 15:369–81

Doney, P. M., Cannon, J. P., & Mullen, M. R. (1998). Understanding the influence of national culture on the development of trust. *Academy of Management Review*, *23*(3), 601-620.

Dube, B., & January, J. (2012). Factors leading to poor water sanitation hygiene among primary school going children in Chitungwiza. *Journal of Public Health in Africa.* 3(7) 25-28

Education Sector Annual Review Report. (2013). *7th Regional education sector performance report, Central Region target school year: 2012/2013. Target fiscal year*. Accra: Ministry of Education.

Eisenhardt, K., (1989). Agency theory: An assessment and review. Academy of Management Review 14(1) 57-74

Elfituri, A. A., Elmahaishi, MS. & MacDonald, T. H. (1999). Role of Health Education Programmes within the Libyan Community. *Eastern Mediterranean Health Journal.* 5(2), 268-276.

Elliot, S., (2010). Children in the natural world. In J. Davis, (Ed.). *Young children and the environment: Early education for sustainability*, (pp. 43-75). Sydney: Cambridge. University Press.

Eshuchi, R. (2013). *Promoting handwashing with soap behaviour in Kenyan schools: Learning from puppetry trials among primary school children in Kenya.* Unpublished doctoral thesis, Faculty of Creative Industries Discipline of Journalism, Media and Communication, Queensland University of Technology: Australia.

Fawtrell, L., & Colford, J. M., (2005). Water, sanitation and hygiene in developing countries: Interventions and diarrhoea – A review. *Water Science and Technology*, 52(8), 133-142.

Fernandez, K., (2008). *Children as agents of change: Practitioners' perspectives on children's participation in Community-Led Total Sanitation.* London: United Kingdom.

Fianko, J. R. & Gawu, J. A. (2019). Evaluation of hand hygiene behaviour in basic schools in Ghana: A case study of the Ablekuma Central Municipality in the Greater Accra Region of Ghana. *Health Education Research*, 35(5) 362-375.

Fligstein, N., & Freeland, R. (1995). Theoretical and comparative perspectives on corporate organization. *Annual Review of Sociology*, 21(1), 21-43.

Fraenkel, J., Wallen, N., Hyun, H. (2012). *How to design and evaluate research in education*. (8th ed.). New York, USA: McGraw-Hill.

Gadhoke, P., (2012). *Structure, culture, and agency: Framing a child as change agent approach for adult obesity prevention in American Indian households*. Unpublished doctoral dissertation, John Hopkins Bloomberg School of Public Health, Ann Arbor Country of Publication, Baltimore, United States. Retrieved from *https*/gradworks.umi.com/35/36/3536107. html.

Gallagher, M. (2008). Power is not an evil: Rethinking power in participatory methodologies. *Children's Geographies.* 6(2), 24-33

Ganthier, C., (2009). *Children's participation in the development process: In the light of working children in Nepal*. Unpublished master's thesis. Department of Industrial Relations. Pokhara University, Nepal.

Garn, J. V., Trinies, V., Toubkiss, J., & Freeman, M.C. (2017). The role of adherence on the impact of a school-based water, sanitation, and hygiene intervention in Mali. *The American Journal of Tropical Medicine and Hygiene*. 96(4), 16.

Garrison, A. H. (2014). Law and politics in the aftermath of 9/11: Understanding the interaction of politics, power, the role of the OLC, and the law during the Bush administration, through agency and policy theory, Garrison Book Proof 24(1). 1-26

Geissler, P. W., Nokes, K., Prince, R. J., Odhiambo, R. A., Aagaard-Hansen, J., & Ouma, J. H. (2000). Children and medicines: Self-treatment of common illness among Luo schoolchildren in Western Kenya. *Social Science and Medicine*, 50, 1771-1783.

Ghana School Health Education Programme. (G-SHEP) (n.d.). *School health in the curriculum*. Accra. Ghana School Health Programme.

Ghana Education Service. (2010). *School Health Education Programme.*, Policy Document, Accra: Ghana

Ghana Education Service. (2012). School Health Education Programme Unit: Wash in schools (wins). *Annual Report.* Accra, Ghana: GES

Ghana Statistical Service. (2014). *Ghana living standard survey round 6, main report: District Profile Report in Ghana, 2005-2011.* Accra, Ghana: GSS

Ghana Statistical Service. (GSS) (2014). *2010 population and housing census. District analytical report,* Accra, Ghana: GSS

Giddens, A. (1984). *The Constitution of Society: Outline of a theory of structuration.* Berkeley: University of California Press.

Giddens, A. (1991). Modernity and Self-Identity: self and society in the late modern age. *Cambridge Polity*, 99, 123-132.

Giddens, A. (2002). Agency, Structure in Calhoun et al. (ed.), *Contemporary Sociological Theory*, (pp. 232-243). New York, NY: Blackwell.

Giddens, A. & Sutton, P. W. (2012). *Sociologia. Pensa*, (pp 414-446). New York, NY: Blackwell.

Giertsen, A., (2001). How can organisations facilitate children's participation? *Participation Learning Action Notes*, 42, 14-17 Nicaragua, Norway.

Glanz, K., Rimer, B. K., & Lewis, F. (Eds.) (2002). *Health behaviour and health education: Theory, research and practice.* (3rd ed.). San Francisco, CA: Jossey-Bass.

Grace, E. (2012). Albert Bandura's social cognitive theory, kids development. *American Journal of Child Development*. Retrieved from http://www.kidsdevelopment.co.uk/albertbandurassocialcognitivetheory.html,

Grace, E. (2015). B.F. Skinner's Behavioural Theory, Kids' development. *American Journal of Child Development.* Retrieved from http://www.kidsdevelopment.co.uk/bfskinnersbehaviouraltheory.html

Gray, E. D. (2009). Doing research in the real world. (3rd Ed.) Sage: London

Grebow, P. M., Green, B., Harvey, J., & Head, C. J. (2000). Shaping health policies. *Educational Leadership*. 3, 64-65.

Gupta, G. R. (2015). Opinion: Sanitation, water and hygiene for all cannot wait for 2030. *Inter Press*. 7(4), 34-42. Retrieved 23 October 2015

Hart, R. A. (1992). *Children's participation: From tokenism to citizenship*, Florence: Italy. United Nations Children's Fund. International Child Development Centre.

Hart, R. A. (1997). *Children's participation: the theory and practice of involving young citizens in community development and environmental care*. London: Earthscan.

Hart, R. A. (2008). Stepping back from "the ladder": Reflections on a model of participatory work with children. In J. Reid(Ed.). P*articipation and learning: Perspectives on education and environment, health and sustainability*. (pp. 19-31) Netherlands: Springer

Hart, J., Newman, J., Ackerman, L. & Feeney, T. (2004). *Children changing their world: Understanding and evaluating children's participation in development.* Plan International. London: United Kingdom.

Hartman, A. (2008). *Education and the Cold War: The battle for the American school*. Palgrave Macmillan.

Hanson, K. (2012). *Schools of thought in children's rights: Children's rights from below* (pp. 63-79). United Kingdom: Palgrave Macmillan.

Hendrikse, G. (2003). Governance of chains and networks: A research agenda. *Journal on Chain and Network Science*. 31(1) 1-6.

Heracleous, L., & Lan, L. L. (2012). Agency theory, institutional sensitivity, and inductive reasoning: Towards a legal perspective. *Journal of Management Studies, 49*(1), 223-239.

Huitt, W., & Hummel, J., (2003). Piaget's Theory of Cognitive Development. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University.

Hornby, G. (2010). Preparing teachers to work with parents and families of learners with SEN in inclusive schools. In C. Forlin (Ed.). *Teacher education for inclusion: Changing paradigms and innovative approaches* (pp. 93-101). London, England: Routledge.

Howard-Barr, E. M. (2008). Comprehensive School Health Program. *America School Health Association.* New York: United State of America.

Hubley, J., (1993). *Communication health-An action guide to health education and health promotion*, London: Macmillan Press.

Humphrey, R. (2002). *An evaluation of community water supply in the Bawku West District of Ghana.* Unpublished master's dissertation, Centre for Arid Zone Studies, University of Wales, Bangor

Islam, M. (2014). Agency theory, education, technology, economy and finance. *World Development*. 23(5) 1231-1238. Retrieved from http://www.slideshare.net/muhibnash/agency-theory-36263676

James, A., & Prout, A. (Eds.). (1997). *Constructing and reconstructing childhood: Contemporary issues in the sociological study of childhood*. Philadelphia: Routledge Falmer Press

Jans, M. (2004). Children as citizens: Towards a contemporary notion of child participation. *Childhood*, 11(1), 27-44.

Jason, C. J. M., and Eshuchi, R., (2007). *Are your hands clean enough? Study findings on handwashing with soap behaviour*: Nairobi: WSP-Africa Region Office. Kenya.

Jeihooni K., A., Kashfi, S. M., & Hazavehei, S. M. M. (2013). Effects of the BASNEF model-based educational programs on blood sugar control. (Type 2 Diabetes). *Health Education & Health Promotion*, 1(1), 33-49.

Jenks, C., (1996) *Childhood*. London: Routledge

Jensen M. C. (1994). Self-interest, altruism, incentives and agency theory. *Journal of Applied Corporate Finance*. 12(3), 232-238.

Jensen M. C., & Meckling W. H., (1976) Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3, 305–360.

Johnson, V. & Scott, P. (1998). Conclusions. In V. Johnson, E. Ivan-Smith, G. Gordon, P. Pridmore, P. & Scott (eds) *Stepping forward: Children and young people's participation in the development process.* London: Intermediate Technology.

Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal 1. *Gender & Development*, *13*(1), 13-24.

Kar, K.., & Chambers, R. (2008) *Handbook on community-led total sanitation.* London: United Kingdom

Kendie S. B. (2002). *Linking water, sanitation and hygiene in Northern Ghana*. Cape Coast: Catholic Press Mission.

Khanal, S., Mendoza, R., Phiri, C., Rop, R., Snel, M. & Sijbesma, C. (2005). *The joy of learning: Participatory lesson plans on hygiene, sanitation, water, health and the environment*. No. 12. Delft, the Netherlands.

Kinicki, A. & Kreitner, R. (2008). *Organizational behaviour: Key concept, skills and best practices.* Boston: McGraw Hill, Irwin

Kiser, E. (1999). Comparing varieties of agency theory in economics, political science, and sociology: An illustration from state policy implementation. *Sociological Theory*, 1, 46-52.

Knafo, A. & Galansky, N. (2008). The influence of children on their parents' values. *Social and Personality Psychology Compass.* 2: 1143–1161

Knowles, S. (2014) John Bowlby's Attachment Theory: Kids development. *Social and Personality Psychology Compass.* 2, 1129-1172. Retrieved from http://www.kidsdevelopment.co.uk/john-bowlbys-attachment-theory.html

Koning, A., Frankiewicz, C., & Arnold, J. (2018). *Employee and agent empowerment.* Boston: CGAP Ideal Books

Kuhn T.S. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Lalloo, D. G., Olukoya, P., & Olliaro, P. (2006). Malaria in adolescence: Burden of disease, consequences, and opportunities for intervention. *Lancet Infectious Disease*. 6, 78-793. Retrieved from infectious diseases. http://dkmic.de/bibliothek/literatur/andere_gebiete/Malaria.pdf>

Lan, L., & Heracleous, L. (2010). Rethinking agency theory: The view from law, *Academy of Management Review*, 35 (2). 294-314

Lansdown, G., (2001). *Promoting children's participation in democratic decision-making*. London: UNICEF.

Leena, K.C. & D'Souza S. J. (2014). Effectiveness of child-to-child approach to health education on prevention of worm infestation among children of selected primary schools in Mangalore. *Nitte University Journal of Health Science*, NUJHS. 4 (1) 2249-7110.

Legrain, A., & Auwers, T., (2006). *The principal-agent model and the network theory as framework for administrative procedures*. A paper presented at social security in Belgium. Annual EGPA Conference. Milan, Italy

Liebel, M. (2014). *From evolving capacities to evolving capabilities: Contextualizing children's rights*. pp 67-84. Singapore: Springer Publications

Lubatkin, M. H., Lane, P. J., & William, S. S., Michael, A., Hitt, R., Edward F. Jeffrey, S. & Harrison. J. (2005). *A strategic management model of agency relationships in firm governance.* New York, NY: Blackwell Publishers Limited.

Lynagh, M., (2004). *An evidence-based approach to an evaluation of a health promoting schools' intervention*. Unpublished doctoral thesis. New Castle: University of New Castle.

MacNaughton, G., & Williams, G. (2009). *Techniques for teaching young children. Choices in theory and practice.* (3rd ed.). Frenchs Forest NSW: Pearson Prentice Hall

Mannion, G., (2007). Going spatial, going relational: Why "listening to children" and children's participation needs reframing. Discourse. *Studies in the Cultural Politics of Education*, 28 (3), 405–420.

Mas-Colell, A., Whinston, M. D., & Green, J. R. (1995). *Microeconomic theory.*1, New York: Oxford University Press.

McKenzie, M. (2009). Pedagogical transgression: Toward intersubjective agency and action. In M. McKenzie, P. Hart, H. Bai, and B. Jickling. (Eds.). *Fields of Green: Restoring Culture, Environment and Education*, (pp 211–224). Cresskill, NJ: Hampton Press.

McLeod, S. A. (2018). *Simply psychology: Cognitive dissonance*. Maryland: University of Maryland. Retrieved from https://www.simplypsychology.org/cognitive,html

McMichael, C. (2019). Water, sanitation and hygiene (WASH) in schools in low-income countries: A review of evidence of impact. *International Journal of Environmental Research and Public Health*. 16(9), 1-21.

Mead, G. H. (2015). *Mind, Self and Society from the standpoint of a social behaviorist.* Chicago: University of Chicago Press.

Melchoir, S., (1989). *Women, water and sanitation or counting tomatoes as well as pumps.* USA: PROW-ESS/UNDP Technical series involving women in water and sanitation, lessons, strategies and tools. /

Milakovich, J., Simonds, V. W., Held, S., Picket, V., LaVeaux, D., Cummins, J., Martin, C., Kelting-Gibson, L. (2018). Children as agents of change: Parent perceptions of child-driven environmental health communication in the Crow community. *Journal of Health Disparities Research and Practice*. 11(3), 115-127

Milgrom, K. (2015). *The role of health communications in behaviour change*. APCO Worldwide. North America: Washington DC.

Milgrom, P., & Roberts. J. (1992). *Economics, organization and management*. London: Prentice Hall.

Miller, J., (2005). *Children as change agents: Guidelines for child participation in periodic reporting on the conversion on the right of children*. Canada: World Vision, Canada

Miller J., & Austin S. L. (2008). *Children as change agents: Guidelines for child participation in periodic reporting on the Convention on the Rights of the Child.* Toronto: World Vision, Canada

Miller, W. R., & Rollnick, S. (2013). *Motivational Interviewing: Preparing people for change.* (3rd ed.). New York: Guildford Press.

Ministry of Water Resources, Works and Housing. (2011). Water and Sanitation Sector Performance Report. *Community Water and Sanitation Agency Corporate Brochure.* Accra: MWRWH, Ghana

Mohapatra, S. C., Sankar, H. & Mohapatra, P. (1993). Child-to-child: The programme in survival and development of children. *Indian Journal of Maternal and Child Health*, 4 (4):118–121.

Montgomery-Andersen R. A., & Borup I. (2012). Family support and the child as health promoting agent in the Arctic: The Inuit way. *Rural and Remote Health* 12 (2), 40-48. Retrieved from https://www.rrh.org.au

Mooijman, A., Esseku, H., & Tay V. (2013). National Implementation Model WASH in Schools. *Rural and Remote Health*. 12(2), 63-69.

Mooijman, A., Esseku, H., & Tay, V. (2014). Ghana education service, National Implementation Model WASH in Schools. *Science Journal of Public Health*, 6(2), 12-21

Mosse, D. (2005). Cultivating development: An ethnography of aid policy and practice. *Anthropology, Culture and Society Series*. Chicago: University of Chicago Press.

Muzaki, S., (2011). Children as effective change agents: The case of school health clubs in the promotion of urban sanitation and hygiene. *BioMed Central Public Health*, 7, 78-86.

Mwanga, J R., Jensen, B. B., P. Magnussen, P., and J. Aagaard-Hansen, J., (2008), School children as health change agents in Magu, Tanzania: A feasibility study. *Health Promotion International*, 23 (1), 16-23.

National Council for Curriculum and Assessment (NaCCA). (2018).*National Pre-tertiary Education Curriculum Framework for developing subject curricula*. Accra: Ministry of Education.

Nonaka D, Kobayashi J, Jimba M, Vilaysouk B, Tsukamoto K, Kano S, Phommasack B, Singhasivanon P, Waikagul, J. Tateno S, & Takeuchi T. (2008). Malaria education from school to community in Oudomxay province, Lao PDR. *Parasitol Internationale*. 57, 76–82.

O'Donnell, D., (2004). *Child protection: A handbook for parliamentarians.* pp 18-20. Geneva: UNICEF

Ohlin, E., (2012). *Children as health change agents in the fight against malaria: A case study in Babati town, Tanzania*. Unpublished bachelor's thesis, Södertörn University College, Sweden.

Okabayashi H, Thongthien P, Singhasvanon P, Waikagul J, Looareesuwan S, Jimba M, Kano S, Kojima S, Takeuchi T, Kobayashi J, Tateno S., (2006). Keys to success for a school-based malaria control program in primary schools in Thailand. *Parasitol International*, 55, 121-126.

Olayiwole,C. B., Ezirim, M., and Glory C. Okoro,G. C., (2003). *Children as agents of sanitation and hygiene behaviour change.* A paper presented at 29th WEDC International Conference Abuja, Nigeria

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

O'reilly, C. E., Freeman, M. C. M. Ravani, J., Migele, A., Mwaki, M., Ayalo, S. Ombeki, R. M. Hoekstra, & Quick, R. (2008). 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.

Patil, V., Solanki, M., Kowli, S. K., Naik, V. A., Bhalerao, V. R., & Subramania, P. (1996). Long-term follow-up of school health education programs. *World Health Forum*, 17(1), 81–82.

Pawson, R., (2006). *Evidence-based policy: A realist perspective*. London: Sage.

Peal A, Evans B, & van der Voorden C., (2010) *Hygiene and sanitation software: An Overview of approaches*. Geneva, Switzerland: Water Supply & Sanitation Collaborative Council

Percy-Smith, B., & Burns, D. (2013). Exploring the role of children and young people as agents of change in sustainable community development. *Local Environment*, *18*(3), 323-339.

Piaget, J. (1970). Piaget's Theory. In P. H. Mussed (Ed.). *Carmichael's Manual of child psychology*. (3rd ed.) Vol. 1, 7033-7032. New York: Wiley.

Postma, L., Getkate, R. & Wijk-Sijbesma, C. A. (2004). Life skills-based hygiene education: A guidance document on concepts, development and experiences with life skills-based hygiene education in school sanitation and hygiene education programmes. 42, 144-145. Delft, The Netherlands, IRC, International Water and Sanitation Centre

Pridmore, P., (2007). *The impact of health on education access and achievement: A cross national review of the research evidence.* Unpublished doctoral thesis, Institute of Education, University of London.

Pridmore, P., & Stephens, D. (2000). Children as partners for health: A critical review of the child-to-child approach. London: Zed Books.

Prozesky, D. R. (2000). Communication and effective teaching. *Community Eye Health*, *13*(35), 44.

Resource Centre Network. (2014). WASH in Schools: Minimum Standards commences. *WASH Reflections.* 41, (42). Accra: Resource Centre Network. Ghana

Riessman, C. K. (2008). *Narrative methods for the human sciences.* Thousand Oaks, CA: Sage.

Rivers, K., & Aggleton, P. (1993). Participation and information: Why young people need more than the "facts" in HIV and AIDS education. *Hygiene*, *12*(2), 22-25.

Robinson, L., (2009). A summary of diffusion of innovations: Enabling change. *Changeology*. Brunswick: Scribe Publications Ltd, Australia

Rogers, E.M., (2005). *Diffusion of innovations.* (5th ed.). New York: The Free Press.

Sakhri M. L (2015). Individuals and action: Agency theory and its uses in Archaeology. *Changeology*. Brunswick: Scribe Publications Ltd, Australia. Retrieved from http://www.slideshare.net/MohamedLaid Sakhri/agencytheoryinarchaeoogypresentation?related=1

School Health Education Programme. (2008). *SHEP Report*. Accra: Ministry of Education, Ghana.

Schultz, P. W., & Kaiser, F. G. (2012). Promoting pro-environmental behaviour. In S. D. Clayton (Ed.). *A handbook of environmental and conservation psychology*. Oxford: Oxford University Press. (pp 556–580). Retrieved from https://doi.org/10.1093/oxfordhb/9780199733026.013.0029

Scott. B., Curtis, V., Rabie, T., & Garbrah-Aidoo, N. (2007) Health in our hands, but not in our heads: Understanding hygiene motivation in Ghana. *Health Policy Plan*, 22 (4), 225–233

Scott, J., & Marshall, G. (Eds.). (2009). *A dictionary of sociology*. USA: Oxford University Press,

Shaeffer, S., (1994). *Participation for educational change: A synthesis of experience.* Paris: International Institute for Educational Planning, UNESCO.

Shapiro, S. (2005). Agency theory. *Annual Review of Sociology*, 31(1), 263-284

Simovska, V. (2000). *Exploring student participation within health education and health promoting schools in critical environmental and health education: Research issues and challenges*. Geneva: Danmarks Lærerhøjskole.

Singh, S., (2013). Global handwashing day: Children as agents of change. *Children's Geographies*. 5(1), 165-181

Skelton, T. (2007). Children, young people, UNICEF and participation. *Children's Geographies*, 5(2), 165-181.

Smith, T. R., 2011. *Agency Theory and its consequences: A study of the unintended effect of agency theory on risk and morality*. Unpublished master's thesis. Copenhagen Business School. Copenhagen.

Smith, E. R., & Mackie, D. M. (2000). Social psychology (2nd ed.). Psychology Press.

Snel, M., (2003). *School sanitation and hygiene education*. India: IRC International Water and Sanitation Centre.

Snel, M., & Caincross, S., (2003). *School sanitation and hygiene education.* Loughborough: WELL Factsheet WEDC. *UK*. Retrieved from http://www.lboro.ac.uk/well/resources/fa.....sheets-htm/ssahe.htm

Stassart, M. & de Visscher, C. (2005). Fondementsthéoriques de l' introduction des contrats d' administration dans les IPSS dans: Revue belge de. *Sécuritésociale*, Volume 3 (pp. 385-408).

Steiner-Asiedu, M. Van-Ess, S. E., Papoe, M., Setorglo, J., Asiedu, D. K., & Anderson, A. K., (2011). Hand washing practices among school children in Ghana. *Current Research Journal of Social Sciences* Volume 3 (pp. 293-300).

St. Leger, L., (2006*). Health promotion and health education in schools: Trends, effectiveness and possibilities, change, Interventions, lessons learned on research methodologies and research implementation from a multi-country research study*. Princes Highway: Royal Automobile Club of Victoria (RACV) Ltd

Stuhmcke, S. M. (2012). *Children as change agents for sustainability: An action research case study in a kindergarten*. Unpublished doctoral thesis, Department of Education. Queensland University of Technology. Queensland.

Surendra, A., (2010). Aristotlelian-Thomistic virtue ethics, emotional intelligence and decision making. *Advances in Management*. 3(4), 7-13

SDSN. (2014) Indicators for Sustainable Development Goals, *Working draft*, New York: United Nations.

Tamale School of Hygiene Resource Group. (2005). *Management of environmental health in decentralised government: Facilitators' guide*. Tamale School of Hygiene Group, Tamale.

Tashakkori, A., & Teddlie, C. (1998). Mixed methodology: Combining qualitative and quantitative approaches. *Applied Social Research Methods Series,* Volume 46. Sage Publications, Inc.

The United Bible Societies. (1994). *Good news bible with the deuterocanonical books.* (2nd ed.). Nairobi: DTP Department Africa Area Service Centre

Thorne, B. (1987). Re-visioning women and social change: Where are the children? *Gender and Society*. 1, 85-100.

Treseder, P., (1997). Empowering children and young people - training manual: Promoting involvement in decision-making. *Save the Children*: United Kingdom

Turker, K., (1998). *Anthony Giddens modern social theory: Structuration theory*. London: Sage United Nations Convention on the Rights of the Child. (1989). *Convention on the Rights of the Child*. Article 5. Geneva: United Nations.

United Nations Children's Fund. (2006). *Progress for Children: A Report Card on Water and Sanitation*. 5, pp 1-5. New York: UNICEF.

United Nations Children's Fund. (2008). Progress in drinking water and sanitation; special focus on sanitation. United Nations Children's Fund. Retrieved from http://www.wssinfo.org/en/40MDg2008html

United Nations Children's Fund. (2011). *WASH in schools Monitoring Package*. 48. New York: UNICEF

United Nations Educational, Scientific and Cultural Organisation. (UNESCO). (2017). *Education for sustainable development goals: Learning Objectives.* Paris: UNESCO

UNFPA. (2002). United Nations Population Funds. (2002). Communication and behaviour change tools. *Programme Briefs*. Volume 1, pp 1-6.

UNICEF/IRC (1998). A manual on school sanitation and hygiene: *Towards Better Programming Water, Environment and Sanitation Technical Guidelines*. New York. http:www.irc.nl/sshe/resources/ch_intro.html

United Nations Water Decade Program on Advocacy and Communication (UN-WDPAC). (2012). *Biennial Report 2010-2011*, Spain: United Nations.

United State Agency for International Development. (USAID). (2017). *Ghana case study summary report: Evaluation of sustained outcomes*. Ghana: USAID.

Van der Knaap, L.M., Nijssen, L.T.J. & Bogaerts, S. (2006). Violence defied: A review of prevention of violence in the public and semi-public domain. The Hague: Boom Juridische Uitgevers.

Van Wijk C., & Murre, T. (2003). *Motivating better hygiene behaviour: importance for public health mechanisms for change*. New York, USA: UNICEF.

Van Wijk C. (1994). *Hygiene education programmes: lessons learnt from evaluation projects for the development of community participation component in the Tanzanian rural water supply programme.* The Hague, the Netherlands, IRC.

Vivasa, A., Gelayea, B., Aboset, N., Kumiec, A., Berhane, Y., & Williams, M. A. (2010). Knowledge, attitudes and practices (KAP) of hygiene among school children in Angolela, Ethiopia. *Journal of Preventive Medicine and Hygiene*, 51(2), 73-79.

Vulliamy, G., Lewin, K., & Stephens, D. (1990). *Doing educational research in developing countries: Qualitative strategies*. London: Routledge.

Vygotsky, L.S. (1978). *Mind in Society*. p.86. New York: Development of Higher Psychological Processes.

Waddington, H., Snilstveit, B., White, H., & Fewtrell, L. (2009). *Water, sanitation and hygiene interventions to combat childhood diarrhoea in developing countries.* Delhi: International Initiative for Impact Evaluation. Retrieved from http://www.3ieimpact.org/admin/pdfs_ synthetic/17.pdf.

Walvekar, P. R., Naik,V. A. Wantamutte, A. S., & Mallapur, M. D., (2006). Impact of child-to-child programme on knowledge, attitude practice regarding diarrhea among rural school children. *Indian Journal of Community Medicine* 31 (2): 56–59.

WASHCost. (2013). *Infosheet.* 5. The Hague, the Netherlands, IRC.

WaterAid. (2011). *Sanitation framework.* London: Water Aid UK. Retrieved from www.wateraid.org/publications.

WaterAid, (2013). *Everyone, everywhere: A vision for water, sanitation and hygiene post-2015.* London: Water Aid, UK

Werner D. & Bower, B. (1992). *Helping health workers learn*. Palo Ata, CA.: The Hesperian Foundation.

World Health Organisation. (1994). *The World Health Organisation's school health initiative*. Geneva: Switzerland

World Health Organisation. (2003). *The Right to Water Document.* Geneva: Switzerland

World Health Organisation. (WHO) (2015). *Water, sanitation and hygiene in health care facilities status in low and middle-income countries and way forward*. Geneva: Switzerland.

WHO/IOMEH (2003). *Joint workshop on advocacy and IEC for children's environmental health*. Geneva: WHO regional Office for Europe. Retrieved from htt://www.eurowho.int.

World Health Orgnisation/United Nations Children's Fund (2014). *Every new born: An Action Plan to End Preventable Deaths.* Geneva: Switzerland. Retrieved from http://www.everynewborn.org/Documents/EveryNewborn_ActionPlan

Wiles, J. L., Rosenberg, M. W., & Kearns, R. A. (2005). Narrative analysis as a strategy for understanding interview talk in geographic research. *Area.* 37(1), 89-99.

Willgoose, C. E. (1974). Health education in the elementary school. Area.1, 89-99.

Williams, J. H. Ed. D. & Leherr, K., (1998). *Children's Health and Nutrition as Educational Issues: A Case Study of the Ghana Partnership for Child Development's Intervention Research in the Volta Region of Ghana*, Technical Paper. 91. Accra: Advancing Basic Education and Literacy Project (ABEL2).

Wiseman, R. M., Cuevas-Rodriguez, G., & Gomez-Mejia, L. R. (2012). Towards a social theory of agency. *Journal of Management Studies*, 49, 202–22.

Wood, E., & Attfield, J. (2004). *Developing a pedagogy of play. Early childhood education society and culture*. London: Sage.

Woods, L. N., (2006). *Behaviour change communication in emergencies: A toolkit*. Nepal: UNICEF

Woolfolk, A., (2007). *Educational psychology*. (10th ed.). Boston: Allyn and Bacon.

Zwane, A. P. & Cramer, M., (2007). What works in fighting diarrheal diseases in Developing countries? A critical review, *The World Bank Research Observer* 22(1), 1-24

Zolten, K., & Long, N. (2006). *Parent/child communication*. Jonesboro, USA: Centre for Effective Parenting. University of Arkansas for Medical Sciences.

Zimmerman, M. A., (200). Empowerment theory. In J. Rappaport & E. Seidman, (Eds). *Handbook of community psychology*. Boston: Springer

APPENDICES

Appendix A: THE 2019 BASIC SCHOOL CURRICULUM

Level	Content	Indicators	Competences
Basic 1	Recognise the importance of personal hygiene	Explain the need for bathing and know how it is done	Collaboration
		Know the need for and how to clean the teeth	
		Demonstrate understanding of the need for and how to wash the hands	Problem solving
		Know the need for keeping the environment clean	
	know common disease of human, causes, symptoms, effect and prevention	Identify some common disease that affect the skin and their causes	
Basic 2	Recognise the importance of water	Find out the qualities of good drinking	Collaboration
	Recognise importance of personal hygiene	Explain how to keep the body clean and describe why it is importance	
		Know the need for keeping classrooms and school compound clean	Problem solving
	Know common diseases of humans, causes, symptoms, effects and prevention	Name some common water-borne diseases and their prevention	
Basic 3	Recognise water as important	Identify things that make water impure	Problem solving
	Recognise the importance of personal hygiene	Describe ways of keeping the environment clean	
	Know common diseases of humans, causes, symptoms, effects and prevention	Know how common skin diseases can be prevented	Collaboration
Basic 4	Recognise water of water	Demonstrate ways of making water safe for use	
	Recognise the importance of personal hygiene	Know how to care for one's self and the environment	Collaboration
Basic 5	Recognise water as important	Identify human activities that make water unsuitable for human use	

	Recognise the importance of personal hygiene	Know why it is important to wash clothes regularly	Collaboration
	Need to keep the environment clean	Know how to keep washrooms clean Demonstrate how to clean the environment regularly	Problem solving
	Demonstrate how to clean the environment Regularly	Identify causes, symptoms and prevention of cholera	
Basic 6	Recognise the importance of personal hygiene	Identify the causes and effects of foul body odour on humans and how it can be prevented	Collaboration

Source: NaCCA (2019)

Appendix B

LIST OF CIRCUITS AND SCHOOLS WITH WASH INTERVENTION IN ASIKUMA-ODOBEN-BRAKWA

Name of circuit	Name of School	Type of intervention	
		CARGIL	UNICEF
Asikuma 'A'	Abuakuwa Catholic Basic	Rain water harvesting for handwashing	WinS (boreholes, Veronica buckets, KVIP changing room)
	Kyirakaa D/A primary	Rain water harvesting for handwashing	WASHSPLAH; WinS (boreholes, Veronica buckets KVIP,
	Asikuma Catholic Boys Basic	KVIP	WinS (boreholes,
Anhwiam	Amanbete New Faith Primary	None	WinS (boreholes, Veronica buckets, KVIP
	Asabeim New Faith Primary	None	WinS (KVIP, changing room)
	Anhwiam D/A Primary	None	WinS (boreholes,
Kuntanase	Kwanan D/A Basic	Rain water harvesting for handwashing	WinS (borehole; Veronica buckets KVIP, and changing room
	Yenkukwaa Presby Basic	Rain water harvesting for handwashing	WinS (borehole; Veronica buckets)
Odoben	Odoben Ahm. Basic	None	WinS (boreholes, veronica buckets, KVIP)
	Odoben Amafua Basic	None	WinS (boreholes, veronica buckets, KVIP)

Appendix A con't:

Name of circuit	Name of School	Type of intervention	
		CARGIL	UNICEF
Odoben	Odoben AME Zion Basic	None	WinS (boreholes, veronica buckets, KVIP)
	Dokon Nkwanta Conerstone Basic	None	WinS (boreholes, veronica buckets, KVIP, changing room)
	Odoben Islamic Basic	None	WinS (boreholes,
	Odoben Presby Basic	None	WinS (boreholes,
Brakwa	Brakwa Eshiem D/A Basic	Rain water harvesting for handwashing	WASHSPLAH; WinS (KVIP, borehole, Veronica buckets, changing room
	Ofabir D/A Primary	Rain water harvesting for handwashing	WASHSPLAH; WinS (KVIP, boreholes, Veronica buckets)
	Ogonaso D/A Primary	Rain water harvesting for handwashing	WASHSPLAH; WinS (KVIP, boreholes, Veronica buckets changing room

Appendix C

LIST OF NON-WASH SCHOOLS IN THE ASIKUMA-ODOBEN-BRAKWA

Name of schools	Name of circuit	Category
ADUMANU D/A BASIC	Anhwiam	NON WASH
ANHWIAM D/A BASIC 'A'	Anhwiam	NON WASH
ANKAASE D/A BASIC	Anhwiam	NON WASH
BREMAN BISEASE D/A BASIC	Anhwiam	NON WASH
ENYANKWAA D/A KG/ PRIMARY	Anhwiam	NON WASH
ESSUMAN-GWIRA D/A BASIC	Anhwiam	NON WASH
OHIANHYEDA D/A BASIC	Anhwiam	NON WASH
OTABILKROM D/A KG/PRIMARY	Anhwiam	NON WASH
SOWOTUOM D/A BASIC	Anhwiam	NON WASH
AKROMA D/A BASIC	Asikuma 'A'	NON WASH
ASIKUMA CATHOLIC GIRLS'S BASIC	Asikuma 'A'	NON WASH
ASIKUMA COL. BAIDOO JHS	Asikuma 'A'	NON WASH
ASIKUMA COL. BAIDOO KG/PRIMARY	Asikuma 'A'	NON WASH
ASIKUMA PRESBY BASIC	Asikuma 'A'	NON WASH

ASIKUMA T.I AHAMADIYYA BASIC	Asikuma 'A'	NON WASH
BAKOO D/A BASIC 'A'	Asikuma 'A'	NON WASH
BAKOO D/A BASIC 'B'	Asikuma 'A'	NON WASH
FANKYENKO D/A BASIC	Asikuma 'A'	NON WASH
KOKOADO D/A BASIC	Asikuma 'A'	NON WASH
OKUKROM D/A KG/PRY	Asikuma 'A'	NON WASH
SUPUNSO D/A BASIC	Asikuma 'A'	NON WASH
ABEHENASE CARGIL D/A KG/PRIMARY	Asikuma 'B'	NON WASH
AMOANDA CATHOLIC BASIC	Asikuma 'B'	NON WASH
AMOANDA D/A BASIC	Asikuma 'B'	NON WASH
ASIKUMA METHODIST BASIC 'A'	Asikuma 'B'	NON WASH
ASIKUMA METHODIST BASIC 'B'	Asikuma 'B'	NON WASH
ATU-DAUDA D/A KG /PRIMARY	Asikuma 'B'	NON WASH
ATU-WASS D/A JHS	Asikuma 'B'	NON WASH
BEDUM CATHOLIC BASIC	Asikuma 'B'	NON WASH
BEDUM PRESBY BASIC	Asikuma 'B'	NON WASH
BEDUM T.I AHMADIYYA BASIC	Asikuma 'B'	NON

		WASH
		NON
NWOMASO METHODIST BASIC	Asikuma 'B'	WASH
		NON
NWOMASO D/A BASIC	Asikuma 'B'	WASH
WANSABIAMPA D/A		NON
KG/PRIMARY	Asikuma 'B'	WASH
		NON
AFOFOSU PRESBY BASIC	Brakwa	WASH
		NON
BRAKWA CATHOLIC BASIC	Brakwa	WASH
		NON
BRAKWA D/A BASIC	Brakwa	WASH
		NON
BRAKWA METHODIST BASIC	Brakwa	WASH
		NON
BRAKWA PRESBY 'A & B' BASIC	Brakwa	WASH

Name of School	Name of circuit	Category NON
BRAKWA PRESBY JHS	Brakwa	WASH
		NON
BRAKWA ISLAMIC	Brakwa	WASH
		NON
ASUOKOO D/A BASIC	Jamra	WASH
		NON
BENIN CATHOLIC 'B' BASIC	Jamra	WASH
		NON
JAMRA ANGLICAN BASIC	Jamra	WASH
		NON
JAMRA D/A BASIC	Jamra	WASH
		NON
JAMRA METHODIST BASIC	Jamra	WASH
AMANFOPONG METHODIST		NON
BASIC	Kokoso	WASH
		NON
AMANOR PRESBY Basic	Kokoso	WASH
ASANTEM METHODIST/D/A		NON
BASIC	Kokoso	WASH
BRAKWA KOKOSO ISLAMIC 'B'		NON
BASIC	Kokoso	WASH
		NON
FOSUANSA CATHOLIC BASIC	Kokoso	WASH
		NON
FOSUANSA METHODIST BASIC	Kokoso	WASH
		NON
KOKOSO CATHOLIC BASIC	Kokoso	WASH
		NON
KOKOSO METHODIST BASIC	Kokoso	WASH

NYAMEBEKYERE D/A KG/PRIMARY	Kokoso	NON WASH
OTABILKWAA D/A BASIC	Kokoso	NON WASH
ASEMPANAYE D/A BASIC	Kuntanase	NON WASH
BOAME NKWANTA D/A BASIC	Kuntanase	NON WASH
BOSOMASE D/A BASIC	Kuntanase	NON WASH
EYIPAY D/A BASIC	Kuntanase	NON WASH
EYIPEY CATHOLIC BASIC	Kuntanase	NON WASH
KUNTANASE CATHOLIC BASIC	Kuntanase	NON WASH
KUNTANASE METHODIST JHS	Kuntanase	NON WASH
KUNTANASE PRESBY BASIC	Kuntanase	NON WASH
KUNTANASE SALVATION ARMY BASIC	Kuntanase	NON WASH
SUPUNA D/A BASIC	Kuntanase	NON WASH
DOMEABRA D/A BASIC	Odoben	NON WASH
NANKESE D/A BASIC	Odoben	NON WASH
ODOBEN CATHOLIC BASIC	Odoben	NON WASH
ODOBEN D/A JHS	Odoben	NON WASH
ODOBEN D/A KG/ PRIMARY	Odoben	NON

		WASH
		NON
ODOBEN METHODIST BASIC	Odoben	WASH
		NON
ODOBEN PRESBY BASIC 'B'	Odoben	WASH
		NON
ODOBEN T.I AHMADIYYA BASIC	Odoben	WASH

Appendix D

INTERVIEW SCHEDULE FOR PUPILS ON THEIR KNOWLEDGE OF WASH

Section A

Demographic Characteristics

a. Name of school……b. Class ……

c. Age ……. d. Sex ……

e. Do you have any health promotion club in the school? Yes [ ] No [ ]

f. Are you a member of the club? Yes [ ] No [ ]

g. Whom do you live with in your household?

h. Who caters for your needs at home?

i. What is the highest level of school completed by your mother or female guardian?

j. What is the highest level of school completed by your father or male guardian?

k. What work does your parent(s) do?

l. Including you how many children live in your household?

Section B

Knowledge of Wash Behaviours

Water

a. Mention the sources of water you use?

b. Mention some uses of water in the home?

c. What are some uses of water at school?

d. Where do you get the water you drink at home from ……

e. Where do you get the water you drink at school from ……

f. Do you see it to be a good drinking water? Yes [ ] No [ ]

g. If yes why? ……

h. If No why? ----------

i. What should be done to make it a good drinking water?

i. What is a good/clean drinking water?……..

j. What can one do to make drinking water good at home? ……

k. Where do you or your family store drinking water at home ----------

l. Where do you or your teachers store drinking water at school ----------

m. Do you use the same water you use for drinking at home for;

i. bathing Yes [ ] No [ ]

ii. handwashing Yes [ ] No [ ]

iii. washing clothes? Yes [ ] No [ ]

n. How can germs be prevented from getting into the water you drink

i. At home……..

ii. At school……

o. Why is it important to prevent germs from getting into drinking water? ---------

p. What are water–related diseases? Give examples of such diseases.

q. What are water-borne diseases? Give examples of such diseases.

Sanitation

a. Why is it important to keep your compound clean?

b. How would you keep your compound clean?

c. Do you have a place of convenience at school ……..?

Yes [ ] No [ ]

d. If yes, is the place of convenience closer to the school?

Yes [ ] No [ ]

e. Do you have a place of convenience at home ……?

Yes [ ] No [ ]

f. If yes, is the place of convenience closer to home?

Yes [ ] No [ ]

g. Do you always use that place of convenience? Yes [ ] No [ ]

h. If Yes why ----------

i. If No where do you use? ----------

j. Is there a problem when people defecate openly?

k. How do you feel when people defecate openly?

l. Are there any dangers associated with open defecation?

Yes [ ] No [ ]

m. If yes, what are they …….

n. In what ways can the dangers associated with open defecation be prevented?

o. What can you do to make people stop open defecation in your

i. school

ii. home

iii. community

Hygiene

a. Mention the parts of the body that usually gives odour…….

b. What causes body odour ……

c. How would you remove odour from the following parts of the human body:

i. Armpit,

ii. Anus

iii. Mouth,

iv. In-between toes

d. List the parts of body that must be clean……..

e. Why is it important to wash hands?

f. Why should you wash your hands before you eat?

g. Why should you wash hands before touching food?

h. Why is it important to brush your teeth?

i. Why is it important to bath?

j. Why is it important to keep fingernails short and clean?

k. Why is it important to take good care of your hair?

l. Why is it important to wash clothes?

m. What are the proper ways of performing the following activities?

Activities **Proper ways**

i. Taking care of the body----------

ii. Hand washing ----------

iii. Taking care of the finger nails----------

iv. Brushing of teeth ----------

v. Taking care of the hair ----------

vi. Washing of clothes Hands----------

n. Mention the things/items you will need to help you perform the tasks properly?

Activities **Items needed**

i. Taking care of the body----------

ii. Hand washing ----------

iii. Taking care of the finger nails----------

iv. Brushing of teeth----------

v. Taking care of the hair ----------

vi. Washing of clothes ----------

o. In what ways can you prevent germs from getting into the

i. Body

ii. Hands

iii. Teeth

iv. Hair

v. Finger nails

p. How often is it important to do the following activities?

Activities **Frequency**

Bathing

Hand washing ----------

Taking care of the finger nails ----------

Brushing of teeth ----------

Taking care of the hair ----------

Washing of clothes ----------

Section C

Communicating WASH information to parents

a. How do you teach your parents about WASH behaviours?

b. What are the challenges you face in communication WASH information to parents?

Appendix E

QUESTIONNAIRE FOR TEACHERS ON THEIR ROLES IN INFLUENCING PUPILS WASH BEHAVIOURS

Name of Circuit ----------Name of school ----------

Class ----------

1. Have you had any training on WASH during your college of education training?
2. Have you had any in-service training on WASH?
3. What is the culture of WASH behavior practices in the school?
4. How do you teach WASH behaviour practice to the pupils in school?
5. How do you communicate WASH behaviour practice to children in your school?
6. How do you communicate WASH behaviour practice to children in your class?
7. How do you know that pupils have understood the message communicated to them?
8. What techniques do you use to engage children in WASH activities?

Do you think the curriculum covers much on WASH activities?

Yes [ ] No [ ]

How? ----------

9. Are there enough materials on WASH to help you communicate good WASH behaviour practices to children?
10. In what ways can children disseminate WASH information learnt at school to parents and peers?

11. Do you think it is important to make children agents of change?

12. Why?----------

13. In what ways can teachers help in making children agents of change?

14. In what ways can teachers be role models for to their pupils?

Appendix F

INTERVIEW SCHEDULE FOR HOUSEHOLD HEADS ON HOW PUPILS COMMUNICATE WASH INFORMATION

DEMOGRAPHIC CHARACTERISTICS

a. Name of Circuit ……
b. Age …….
c. Sex ……
d. Do you have a child in WASH school? Yes [ ] No [ ]
e. How many?
f. Are you a member of the PTA in another school? Yes [ ]No [ ]
g. Are you the primary household earner? Yes [ ] No [ ]
h. If No who is the primary household earner?
i. What is the employment of the household earner? Yes [ ] No [ ]
j. What is the highest level of school completed? ----------
k. How many children live in your household?----------

Information on Water Sanitation Hygiene

l. How do you get or receive health information? ----------
m. Do you trust the source(s) of the information? ----------
n. Do your children give you information about WASH? Yes/No
o. What kind of information did they give to you? ----------
p. Where do you think they(children) get that information from? ------
q. Do you trust the source of their information? ----------
r. Why? …….

s. How did you receive such information? ----------

t. How often do children speak to you about WASH information learnt at school? ----------

u. Do you trust the information given by children to you on WASH behaviours?

Yes [ ] No [ ]

v. Why? ----------

w. How do children teach members of the household on maintaining good WASH behaviours? ----------

x. Do you think maintaining good WASH behaviour is important?

Yes [ ]No [ ]

Why? ----------

y. Do you think it is important for children to teach people in the community about WASH? Yes [ ] No [ ]

z. Why? ----------

aa. What benefits will it be if children teach people in the community about WASH? ----------

bb. Do you think children can teach and influence change in their families from their knowledge on WASH behaviours learnt at school? Yes [ ]No []

cc. Why? ----------

dd. What specific issues have your child discussed to you about WASH?

ee. What challenges do children face in sharing WASH information to your family especially with your spouse?

Appendix G

KEY INFORMANT INTERVIEW ON WASH BEHAVIOURS

Name of Circuit ---------- School type ----------

Name of school ----------

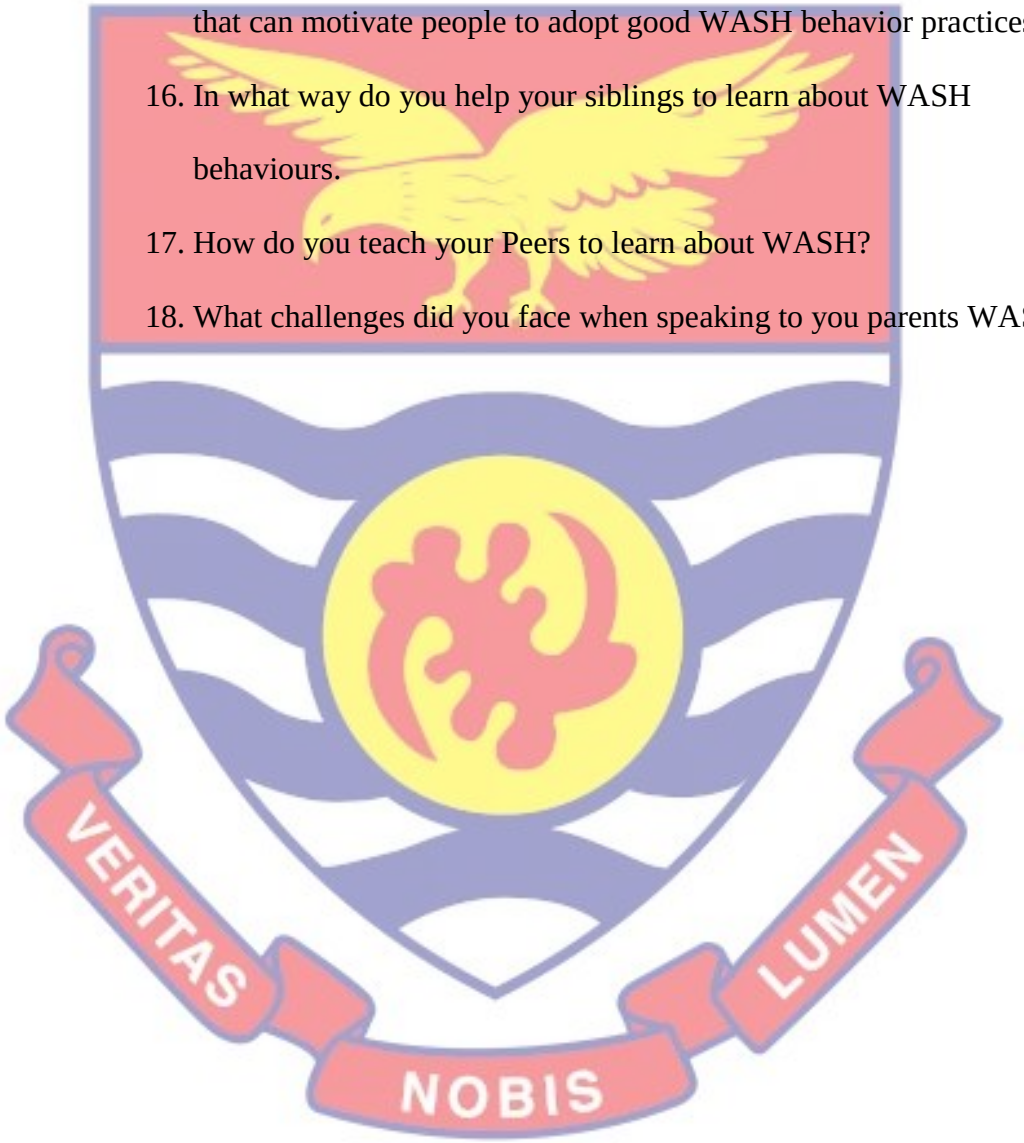
1. What role do you play as a SHEP representative in your school?
2. Is there a school health club in the school?
3. How often do they meet?
4. What are their roles in the school?
5. Are there adequate materials for the SHEP activities in the school?
6. What are the attitudes of teachers toward WASH activities in the school?
7. Does the school have a policy on WASH activities?
8. How do you ensure that WASH activities go on well in the school?
9. In what ways can children communicate WASH information to Parents and their Peers?
10. What challenges do children face in Communicating WASH information to parents?
11. In what ways do teachers become role models to their children?

Appendix H

FOCUS GROUP DISCUSSION FOR PUPILS

1. Indicate the health risks of the following:
    i. open defecation,
    ii. not observing hand washing and
    iii. drinking untreated water.
2. How would you control the spread of water-borne diseases in your school, home and community?
3. How would you help in control the spread of water-related diseases in your school, home and community?
4. How would you help in control the spread of sanitation-related diseases you have mentioned in your school, home or community?
5. How would you help control the spread of hygiene-related diseases in your school, home and community?
6. What are the important determinants (elements/factors) for safe WASH behaviours?
7. Why do people practice safe and unsafe WASH behaviours?
8. What factors make you change or adopt good personal hygiene?
9. What are the possible dangers of failing to observe good WASH behaviour practices?
10. How do you tell your families about WASH?
11. When do you tell your families about WASH
12. How do you correct people or talk to people to adopt good WASH behavior practices?

13. What problems do you face when you correct people to do the right WASH behavior practices?
14. What steps did you take to help people to practice the right WASH behaviours?
15. What WASH activities can be undertaken through folklores and songs that can motivate people to adopt good WASH behavior practices?
16. In what way do you help your siblings to learn about WASH behaviours.
17. How do you teach your Peers to learn about WASH?
18. What challenges did you face when speaking to you parents WASH?



Appendix I

CHECKLIST ON PERSONAL HYGIENE BEHAVIOURS FOR PUPILS;

Personal Hygiene Indicators

Short nails	Yes [ ]	No [ ]
Clean nails	Yes [ ]	No [ ]
Short hair	Yes [ ]	No [ ]
Lice in hair	Yes [ ]	No [ ]
Neatly combed hair	Yes [ ]	No [ ]
Odour in hair	Yes [ ]	No [ ]
Cleanliness of skin	Yes [ ]	No [ ]
Wounds/sores on skin	Yes [ ]	No [ ]
Rashes /infections on skin	Yes [ ]	No [ ]
Bad body odour	Yes [ ]	No [ ]
Dirty school uniform	Yes [ ]	No [ ]
Bad smell in school uniform	Yes [ ]	No [ ]
School uniform clean	Yes [ ]	No [ ]
Cleanliness of teeth	Yes [ ]	No [ ]
Particles in-between teeth	Yes [ ]	No [ ]
Odour in mouth	Yes [ ]	No [ ]

Appendix J

WASH PRACTICE INDICATORS FOR SCHOOLS

Availability of good water supply	Yes [ ]	No [ ]
Adequate water supply	Yes [ ]	No [ ]
Clean drinking water	Yes [ ]	No [ ]
Availability of sanitary facility	Yes [ ]	No [ ]
Separate toilet for boys, girls, teachers	Yes [ ]	No [ ]
Separate urinal for boys, girls, and teachers	Yes [ ]	No [ ]
Sanitation facility clean	Yes [ ]	No [ ]
Adequate to serve pupils	Yes [ ]	No [ ]
Faeces on path to school	Yes [ ]	No [ ]
Faeces around the school	Yes [ ]	No [ ]
Animal faeces on school compound	Yes [ ]	No [ ]
Urinating on school compound	Yes [ ]	No [ ]
Is compound clean	Yes [ ]	No [ ]
Presence of bins for sanitary disposal within the school	Yes [ ]	No [ ]
Availability of handwashing facility	Yes [ ]	No [ ]
Availability of water for handwashing	Yes [ ]	No [ ]
Adequate water for handwashing	Yes [ ]	No [ ]
Availability of cleansing agent (soap)	Yes [ ]	No [ ]
Closeness of handwashing facility to toilet	Yes [ ]	No [ ]
Handwashing after defecation	Yes [ ]	No [ ]
Handwashing before eating	Yes [ ]	No [ ]
Handwashing after playing	Yes [ ]	No [ ]

Supervision on toilet use and maintenance by school children Yes [ ] No [ ]

Supervising toilet use and maintenance	Yes [ ]	No [ ]
Supervising hand washing	Yes [ ]	No [ ]
Presence of WASH learning materials	Yes [ ]	No [ ]
Posters	Yes [ ]	No [ ]
Stickers	Yes [ ]	No [ ]
Flyers	Yes [ ]	No [ ]
Video tapes	Yes [ ]	No [ ]
Audio tapes	Yes [ ]	No [ ]
Pictures	Yes [ ]	No [ ]

Appendix K

INFORMED CONSENT FORM FOR PUPILS

General Information about Research

The research is on the role of school children play in water, sanitation and hygiene (WASH) behaviour change practices in the Central Region. It specifically seeks to examine the WASH behaviour change activities indicated in the primary school curriculum; what children know about proper WASH behaviours; the what they have been practicing at school and at home; the role teachers play in pupils' WASH behaviour change practices and how pupils communicate the knowledge on WASH gained at school to their parents at home to practice proper WASH behaviours. This is an academic investigation toward the award of a doctoral degree in Development Studies at the University of Cape Coast.

Procedures

To find answers to some of these questions, we invite you and your child to take part in this research project. If you accept, you and your child will be required to participate in an interview with one of our trained research assistants or myself and answer a questionnaire. You are being invited to take part in this survey because we feel that as a parent you have much interactions with your child on WASH practices. You will be asked some questions on how your child communicate WASH information to you and how your household practice proper WASH behaviours at home. Your response would be audio recorded, translated and transcribed. The tapes will be immediately deleted completely from our system after the transcription. If you do not wish to answer any of the questions posed during the survey and the interview, you

may say so and the interviewer will move on to the next question. The interview will take place in your home and your child's school or a convenient location of your choice and so no one but the interviewer will be present. The information recorded is considered confidential, and no one else except myself and my principal supervisor (Prof. S. B. Kendie) will have access to the tapes. The expected duration of the interview is about thirty (30) minutes.

Possible risks and discomforts

There are no anticipated foreseeable physical, social and psychological risks or discomforts for you for participating in this study except in instances where a question may cause you to recall poor sanitary conditions. It is expected that the knowledge to be gathered from this research will help boost the confidents of pupils to play their role as change agents in WASH behaviour change practices at home which will to improve WASH behaviour practices of their household members and their communities in general. You and your child are free to join this study and you can stop participating at any time if you feel uncomfortable. No one will be angry with you or punish you if you do not want to participate or stop participating. I will also ask permission from your child before he/she is enrolled into the study. Even if your child say "yes" you can still decide not to participate. Children's answers will be not be associated with their names. Rather, each child will be given an identification number on the interviewer's sheet. The audiotape of your child's participation will be destroyed after it has been transcribed.

Name of household head: ……Signature/Thumbprint: ……

Date: ……..

If volunteer cannot read the form themselves, a witness must sign here I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Witness's Name: ……

Witness's Mark/Thumbprint: ……

Date: **……**

Appendix L

INFORMED CONSENT FORM FOR HOUSEHOLDS HEADS OF PUPILS

General Information about Research

The research is on the role of school children play in water, sanitation and hygiene (WASH) behaviour change practices in the Central Region. It specifically seeks to examine the WASH behaviour change activities indicated in the primary school curriculum; what children know about proper WASH behaviour; the what they have been practicing at school and at home; the role teachers play in pupils' WASH behaviour change practices and how pupils communicate the knowledge on WASH gained at school to their parents at home to practice proper WASH behaviours. This is an academic investigation toward the award of a doctoral degree in Development Studies at the University of Cape Coast.

To find answers to some of these questions, we invite you and your child to take part in this research project. If you accept, you and your child will be required to participate in an interview with one of our trained research assistants or myself and answer a questionnaire. You and your child are being invited to take part in this survey because we feel that as a parent you have much interactions with your child on WASH practices. You will be asked some questions on how your child communicate WASH information to you and how your household practice proper WASH behaviours at home. Your response would be audio recorded, translated and transcribed. The tapes will be immediately deleted completely from our system after the transcription. If you do not wish to answer any of the questions posed during the survey and

the interview, you may say so and the interviewer will move on to the next question. The interview will take place in your home and your child's school or a convenient location of your choice and so no one but the interviewer will be present. The information recorded is considered confidential, and no one else except myself and my principal supervisor (Prof. S. B. Kendie) will have access to the tapes. The expected duration of the interview is about thirty (30) minutes. There are no anticipated foreseeable physical, social and psychological risks or discomforts for you for participating in this study except in instances where a question may cause you to recall poor sanitary conditions. It is expected that the knowledge to be gathered from this research will help boost the confidents of pupils to play their role as change agents in WASH behaviour change practices at home which will to improve WASH behaviour practices of their household members and their communities in general. You and your child are free to join this study and you can stop participating at any time if you feel uncomfortable. No one will be angry with you or punish you if you do not want to participate or stop participating. I will also ask permission from your child before he/she is enrolled into the study. Even if your child say "yes" you can still decide not to participate. Children's answers will be not be associated with their names. Rather, each child will be given an identification number on the interviewer's sheet. The audiotape of your child's participation will be destroyed after it has been transcribed.

Name of household head: ……Signature/Thumbprint: ……

Date: **……..**

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title School children as agents of WASH behaviour change practices in the Asikuma-Odoben-Brakwa district in the Central Region has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Name of household head: …… Signature/Thumbprint: ……

Date: ……..

If volunteer cannot read the form themselves, a witness must sign here I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Witness's Name: ……

Witness's Mark/Thumbprint: ……

Date: ……

Appendix M

INFORMED CONSENT FORM FOR TEACHERS

PART I: INFORMATION SHEET

Title: [School Children as Agents of Water, Sanitation and Hygiene Behaviour Change Practices in the Central Region]

Principal Investigator: [*Juliette Dufie Otami, Mrs.*]

Address: [School for Development Studies, UCC, Cape Coast.]

General Information about Research

The research is on the role of school children play in water, sanitation and hygiene (WASH) behaviour change practices in the Central Region. It specifically seeks to examine the WASH behaviour change activities indicated in the primary school curriculum; what children know about proper WASH behaviours; what they have been practicing at school and at home; the role teachers play in pupils' WASH behaviour change practices and how pupils communicate the knowledge on WASH gained at school to their parents at home to practice proper WASH behaviours. This is an academic investigation toward the award of a Doctoral degree in Development Studies at the University of Cape Coast.

Procedures

To find answers to some of these questions, we invite you to take part in this research project. If you accept, you will be required to participate in an interview with one of our trained research assistants or myself and answer a questionnaire.

You are being invited to take part in this survey because we feel that as a teacher in this school who has been an integral member of the project

implementation in your school, you have gained considerable experience and knowledge about the project and can contribute much to this direction. You will be asked some questions on your participation in WASH activities in the school, action or roll out plans on WASH, and other activities put in place, to ensure that school children practice proper WASH behaviours at school and send same information at home. Your response would be audio recorded and later transcribed. The tapes will be immediately deleted completely from our system after the transcription.

If you do not wish to answer any of the questions posed during the survey and the interview, you may say so and the interviewer will move on to the next question.

The interview will take place in your school or a convenient location of your choice and so no one but the interviewer will be present. The information recorded is considered confidential, and no one else except myself and my principal supervisor (Prof. S. B. Kendie) will have access to the tapes. The expected duration of the interview is about thirty (30) minutes.

Possible Risks and Discomforts

There are no anticipated foreseeable physical, social and psychological risks or discomforts for you for participating in this study except in instances where a question may cause you to recall poor sanitary conditions.

Possible Benefits

It is expected that the knowledge to be gathered from this research will help boost the confidents of pupils to play their role as change agents in WASH behaviour change practices at home which will to improve WASH behaviour practices of their household members and their communities in general.

You are being invited to take part in this discussion because we feel that your experience as a teacher can contribute much to this discussion**.** During this discussion, however, we do not wish you to tell us your personal experiences, but give us your opinion on the questions that we will pose to the group based on your personal experiences and your experience within your community. If you do not wish to answer any of the questions included in the survey, you may skip them and move on to the next question. The information recorded is considered confidential, and no one will have access to your survey.

Possible Risks and Discomforts

There are no reasonable foreseeable physical, social and psychological risks or discomforts to participants in this study except in instances where a question may cause you to recall poor sanitary conditions.

Possible Benefits

This research has the potential to make positive contribution towards national debate on using school children as agents of WASH behaviour change in their communities.

Confidentiality

We will protect information about you to the best of our ability. You will not be named in any report. Where necessary, pseudo names will be used in the report and no personal identifiers will appear in the report. We also assure you that information you provide will be treated confidential and will be used only for purposes of this study. Digital recordings will be immediately destroyed after transcription and report writing. All paper transcripts will be burned, while the soft copies will be electronically saved for 5 years with a secured

password which would be known only by the principal investigator after which they will be completely deleted.

Compensation

There are no compensation packages associated with your participation in this research, as this is a purely academic work. It is considered that your participation is part of your commitment to help improve WASH behaviour practices in the Central Region.

Voluntary Participation and Right to Leave the Research

Your participation in this research is entirely voluntary and you may, at any point in time, decide to withdraw from the study, if you find that necessary. You should also let me know if you are not comfortable to respond to any of the questions I will pose to you. I will proceed to the next question, if this situation arises.

The above document describing the benefits, risks and procedures for the research title ***(Schoolchildren as agents of water, sanitation and hygiene behaviour change practices in the Central*** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Volunteer's Name:……....

Volunteer's signature ……..…

Date: **……**

Appendix N

INFORMED CONSENT FORM HEADTEACHERS

Title: [School Children as Agents of Water, Sanitation and Hygiene Behaviour Change Practices in the Central Region]

Principal Investigator: [*Juliette Dufie Otami, Mrs.*]

Address: [School for Development Studies, UCC, Cape Coast.]

General Information about Research

The research is on the role of school children play in water, sanitation and hygiene (WASH) behaviour change practices in the Central Region. It specifically seeks to examine the WASH behaviour change activities indicated in the primary school curriculum; what children know about proper WASH behaviours; what they have been practicing at school and at home; the role teachers play in pupils' WASH behaviour change practices and how pupils communicate the knowledge on WASH gained at school to their parents at home to practice proper WASH behaviours. This is an academic investigation toward the award of a doctoral degree in Development Studies at the University of Cape Coast.

Procedures

To find answers to some of these questions, we invite you to take part in this research project. If you accept, you will be required to participate in an interview with one of our trained research assistants or myself and answer a questionnaire. You are being invited to take part in this survey because we feel that as a headteacher in this school who has been an integral member of the project implementation in your school, you have gained considerable experience and knowledge about the project and can contribute much to this

direction. You will be asked some questions on your participation in WASH activities in the school, action or roll out plans on WASH, and other activities put in place, to ensure that school children practice proper WASH behaviours at school and send same information at home. Your response would be audio recorded and later transcribed. The tapes will be immediately deleted completely from our system after the transcription.

If you do not wish to answer any of the questions posed during the survey and the interview, you may say so and the interviewer will move on to the next question. The interview will take place in your school or a convenient location of your choice and so no one but the interviewer will be present. The information recorded is considered confidential, and no one else except myself and my principal supervisor (Prof. S. B. Kendie) will have access to the tapes. The expected duration of the interview is about thirty minutes.

Possible Risks and Discomforts

There are no anticipated foreseeable physical, social and psychological risks or discomforts for you for participating in this study except in instances where a question may cause you to recall poor sanitary conditions.

Possible Benefits

It is expected that the knowledge to be gathered from this research will help boost the confidents of pupils to play their role as change agents in WASH behaviour change practices at home which will to improve WASH behaviour practices of their household members and their communities in general.

VOLUNTEER'S AGREEMENT

The above document describing the benefits, risks and procedures for the research title ***(Schoolchildren as agents of water, sanitation and hygiene behaviour change practices in the Central*** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Volunteer's Name:……...

Volunteer's signature……..

Date: **……**