



***THE EFFECT OF WATER, SANITATION AND HYGIENE PROJECT INTERVENTIONS  
ON IMPROVING HEALTH OUTCOMES AMONG PRIMARY SCHOOL PUPILS IN  
KIGAMBONI MUNICIPAL***

***\*Jackson, \*\* Oyagi & \*\*\* Kashaga***

*\*Getruda Jackson Kampala International University in Tanzania, Department of Postgraduate  
and Research Kampala International University in Tanzania Dar es salaam, Tanzania,*

*Department of Postgraduate and Research*

*Phone:+255713338181 email: [getrudejackson255@gmail.com](mailto:getrudejackson255@gmail.com)*

*\*\* Dr. Benard Nyakweba Oyagi: Senior Lecturer of Kampala International University in  
Tanzania, P.O BOX 9790 Gongo la Mboti Dare es Salaam, Tanzania, email*

*[nyakwebabernard2891@gmail.com](mailto:nyakwebabernard2891@gmail.com)*

*\*\*\* Dr. Frateline Kashaga: Senior Lecturer of Kampala International University in Tanzania,  
P.O BOX 9790 Gongo la Mboti Dare es Salaam, Tanzania, email*

*[fratelinekashaga@hotmail.com](mailto:fratelinekashaga@hotmail.com)*

---

**Abstract**

*Globally, countries had to put greater efforts on WASH at schools, due to the overcrowded of pupils in primary schools for good health and socio-economic development of the wellbeing of pupils. The study aims to describe the practices of pupils regarding the use of sanitation and hygiene facilities in primary schools, and to identify the strategies school administrators employed to improve WASH facilities in school pupils in Kigamboni municipality. The study employed descriptive quantitative, the targeted population was 400, the sample size of 222 was selected, and cluster and purposively sampling was used. Questionnaire, and documents reviewed were used as the research instruments. Data were analyzed by descriptive analysis (mean and standard deviation), and bivariate correlation coefficient (Pearson's r). The study findings concluded that, the creation of enabling environment by the schools will help to motivate the proper practices regarding WASH so as to promote the health outcome. The researcher recommended that the government and Non Government Organizations to participate*

*and sponsor the implementation of WASH project activities in schools so as to improve the health outcomes of students, teachers and other staffs.*

***Key Definitions Terms: Sanitation, Hygiene, Water, School, WASH***

---

## **1.1 Introduction**

Worldwide, many people are still using unimproved drinking water due to unprotected wells, springs and surface water, nearly half of them (319 million people) live in Sub-Saharan Africa remains the region with the highest number of people without access to improved sources of drinking water in the world (UN, 2015).

African countries have very small water and essential sanitation coverage in spite of good sanitation and safe drinking water is fundamental for wellbeing and basic human rights this is reflected in the Sustainable Development Goal (SDG) number six, to “ensure availability and access to water and sanitation for all”. However, sanitation remains poorly resourced and understood, resulting in limited progress (UNICEF, 2015).

Water, sanitation and hygiene conditions in Kenyan rural schools: are schools meeting the needs of menstruating girls. This lead to clean drinking water in schools appears to impact student health and reduce absenteeism and they found that menstruating girls in these same rural, and need confidentiality in the toilet and water for washing hands. Hand washing with soap is generally more effective than water alone and girls need soap more often during menstruation to wash soiled hands and clothes to maintain hygiene (Alexander et al., 2014).

In Tanzania, only 45% and 15.4% of the country’s population has access to safe water and sanitation, respectively, and most of these are in urban areas that have adequate water coverage when a household is connected to a water grid or has access to a public water kiosk or a borehole that can be accessed within 30 min, however, household water connection remains a domain of the urban elite high and middle classes, this group of people lives in easy to reach areas serviced by grids, can afford the service and are adequately empowered to advocate for access to services (World Bank, 2017).

In Tanzanian, school WASH (SWASH) was 40% of the primary schools due to limited access water supply, additionally, 84% of schools have no functional hand washing facilities, one latrine serve 75 pupils while one latrine serves an average of 56 pupils according to the Ministry of

Education, Science and Technology (MoEST)-SWASH Strategic Plan ), while there is an effort to improve access to improved WASH infrastructures by the Government of Tanzania launched a National Sanitation Campaign (NSC) in 2012 to stimulate demand for sanitation, hygiene and improved water supply in rural areas of Tanzania using community and school-led total sanitation and sanitation marketing approaches (Antwi-Agyei *et al.*, 2017).

In 2013, the United Republic of Tanzania recognized the human right to water and sanitation in its constitution. The policies and plans for water, sanitation and hygiene (WASH) are part of the policies for water, health, and education (Human right to water and sanitation of 2013). For many years now, sanitation has become an international policy agenda whereby in Tanzania it was included in the Sustainable Development Goal (SDG) number six postulated as “It demands to ensure availability and access of water and sanitation for all”(URT,2013)

WASH services in schools may contribute to improved education and health of children by reducing the number of days missed in schools due to menstrual periods, or providing more time for learning tasks and adequate WASH in schools could also prevent diarrhea and gastrointestinal diseases (Jasper *et al.*, 2012).

The water, sanitation, and hygiene gaps triggered Sanitation and Water Action (SAWA) a Non-Governmental Organization (NGO) in partnership with UNICEF, and Kigamboni Municipal Council to implement the School WASH project in 2014-2015 in Kigamboni, Dar es Salaam. Despite the intervention, there is limited provision of WASH facilities and activities at schools to meet the demand of a fast-growing number of pupils, due to implementation of free education policy in 2016 at Vijibweni and Ugindoni primary school in Kigamboni municipality.

## **1.2 Statement of the Research Problem**

Globally WASH facilities at schools are fundamental for teachers and pupils to be able to work and learn in a healthy and safe environment, many pupils goes to school when their physical and healthily fine but many schools are facing the challenge of Water, sanitation, and hygiene services due fast-growing school children population resulted to expansion of the education sector (URT, 2009).

Due to the increase of the high number of pupils in Tanzanian’s schools resulted from the implementation of free education policy started in 2016, led to increasing demand for sanitation facilities and services for school children, teachers, and other staff while WASH services

remained the same and school are overcrowded that cause the spreading of epidemic diseases such as urinary transmission infections (U.T.I) and diarrhea, lack of privacy for girls during menstruation that affects pupils physically and their school attendance, while Sustainable Development goal (SDG6) advocate to “ensure availability and access to water and sanitation for all”. That influences the researcher to dig on the effect of WASH project intervention in primary schools because understanding for children can be the most effective advocates for social and behavior change that happened in individual, community and primary school level concerned with hygiene and sanitation knowledge in Tanzania as whole.

In Kenya, practices of pupils regarding the use of sanitation facilities among primary school children have struggled with accessing the right materials for managing their hygiene, and require privacy in latrines and water and soap for washing hands due to leakage, hand washing with soap is generally more effective than water alone and girls need soap more often during menstruation to wash soiled hands and clothes to maintain hygiene. Also the government of Kenya does not provide schools with sufficient resources for constructing WASH facilities; as funds given to schools are mainly for repairing existing infrastructure (*Blanton et al., 2010*).

### **1.3 Objectives of the study**

- i. To describes the practices of pupils regarding the use of sanitation and hygiene facilities in primary schools in Kigamboni Municipality.
- ii. To identify the strategies school administration has employed to improve WASH facilities in school pupils and the community involved in the Kigamboni municipality.

### **2.1 Literatures Review**

UNICEF(2015) in USA conducted research in different schools worldwide concerning WASH situation at schools and revealed that; globally, in 2016, 69% of schools had an improved source of drinking water with water available and were therefore classified as providing a basic drinking water service. An additional 12% of schools had an improved source but water was unavailable at the time of the survey so they were counted as providing a limited service and also 53% of schools worldwide had hand-washing facilities with soap and water available at the time of the survey and were therefore classified as having a basic hygiene service,11% had hand-washing facilities but no soap available at the time of the survey so they were counted as providing a limited service. 36% of schools had no hand-washing service. It is therefore estimated that over

850 million children lacked a basic service and either had a limited or no hand-washing service at their school.

*Blanton et al., (2010)* in Nyanza Province, Western Kenya conducted the study concerned the practices of pupils regarding the use of sanitation facilities among primary school children in Menstrual solution study reveals that menstruating girls in these primary schools have struggled with accessing the right materials for managing their menses, and require privacy in latrines and water for washing hands due to leakage. Hand washing with soap is generally more effective than water alone and girls need soap more often during menstruation to wash soiled hands and clothes to maintain hygiene. Also the government of Kenya does not provide schools with sufficient resources for constructing WASH facilities; as funds given to schools are mainly for repairing existing infrastructure.

*Antwi-Agyei et al., (2017)* in Tanzania, Conducted a study concerning with Water, sanitation, and hygiene (WASH) in schools: results from a process evaluation of the National Sanitation Campaign .in their study they revealed that although WASH facilities were available in some of the schools, they were inadequate in terms of facility-user ratios, functionality and proper operation and maintenance. There was also active participation in WASH activities by key factors such as teachers, school children, the community and the various government departments, though poor planning and coordination, inadequate funding and budgeting, and a lack of spare parts for repairs and maintenance was found to be the main challenges to improved WASH in schools in Tanzania

According to *Agberemi et al., (2009)* in Nigeria conducted the study concerning WASH strategies within the school, in their study they reveals that schools employed different campaigns; these campaigns were organized in community schools with the active participation of all the community members and the organizing committee for the campaigns, the campaigns were facilitated by the LGA Water, Sanitation and Hygiene Units. The School Environmental Health Clubs played active roles during and after the campaigns. The School Environmental Health Clubs' roles during the campaigns involved educating the audience with songs and short drama on hygiene practices especially hand washing while the club members were also involved in rallies and hygiene promotion within the communities as follow up to the campaigns.

### 3.1 Methodology

This study was conducted using descriptive quantitative design to gather information on a particular study under investigation (cooper and Shindler, 2003). therefore, the major concern of using this descriptive quantitative design as a method of gathering information by administer a questionnaire to a sample individuals and employed quantitative research approach (Kothari 2004). The targeted populations were standard six and seven 490 pupils, and 10 teachers that make the total population of 500 people from two schools. The sample size obtained by using Slovene’s Formula to get 222 samples, and purposively sampling was used. The questionnaire was designed after reviewing of related literature in relation to water, sanitation, and hygiene situations to improve the health and performance of primary school pupils and objectives of the study. The closed-ended questionnaire was used to collect data from respondents.

### 4.1 Research Findings

#### 4.1.1 Demographic characteristics

This section shows respondents’ distribution by gender, age, and Education of the respondents. Demographic feature may have different opinions (Churchill & Iacobucci,2010), respondents have different opinion on the effect of WASH project intervention on improving health outcome of primary school pupils.

**Table 4.1: Demographic of Respondents**

		Frequency(f)	Percent (%)
Gender	Male	73	36.5
	Female	127	63.5
Age	10-15years	185	92.5
	16-21years	5	2.5
	22-27years	4	2.0
	28years >	6	3.0
Education	Std six	101	50.5
	Std 7	95	47.5
	Diploma	3	1.5
	Degree	1	.5
Total		200	100.0

Source: researcher (2020)

Table 4.1 above shows the Demographic of respondents regarding WASH questionnaires provided at primary schools in Kigamboni municipal as follows;

“The gender distribution of respondents” the overall finding of gender were female 127(63.5%) and males 73(36.5%). This implies that females’ responded more to the WASH questions provided than males that were at schools. It was observed that they are more female pupils in school than ever; it’s because of the free education policy establishment in Tanzania. It is a good sign of women empowerment in the future.

“Age distributions of respondents” the overall age distribution of respondents responding to the WASH question aged between 10-15 years that were 185(92.5%) followed by age group 28 years and above that were 6(3%) followed by 16-21years were 5(2.5%) and age group 22-27years were 4(2%), this implies that pupils aged 10-15years which were 185(92.5%) and much responding to WASH questions provided followed by teachers this is due to the fact that pupils were the main target or unit of analysis of the study and they are the ones who are many in both schools than teachers.

“Education qualification of respondents” the education level of the respondents were standard six 110(55.0%), followed by standard seven 80(40.0%). the teachers question provided the age of respondents responded were teachers with certificate level was 7 (3.5%) followed by diploma level teachers 3(1.5%). This means the mass of respondents responded to WASH questions provided were standard six levels followed by standard seven at schools. This is because the standard six and seven were the main target and sample size of the study under concerns.

**4.2 Determination of the effects of water, sanitation, and hygiene project interventions on improving health outcomes among primary school pupils in the Kigamboni Municipality, Dar-es-salaam, Tanzania was identified against respondents**

A five point Likert scale was provided ranging from: From 1 to 5.00 as shown in the table 4.2 below.

**Table 4.2 Likert scaling**

Description	Likert scale	Mean Range	Interpretation
Strongly agree	1	1.00 - 1.80	Very High
Disagree	2	1.81 - 2.60	High
Neutral	3	2.61 - 3.40	Moderate
Agree	4	3.41 – 4.20	Low
Strongly disagree	5	4.21 - 5.00	Very Low

Source: Author (2020)

#### 4.2.1 To describe the practices of pupils regarding the use of sanitation and hygiene facilities in primary school.

The study sought to describes the practices of pupils regarding the use of sanitation and hygiene facilities in Kigamboni municipality. Table 4.3 shows the summary.

**Table 4.3 Practices of pupils regarding the use of sanitation and hygiene facilities in primary school**

Variables	N	Mean	Std. Deviation
The pupil's drinks water from the main source provided by the school	190	2.095	1.3620
Activities such as reminders, posters near to toilet undertaken for hygiene promotion at school	190	2.654	1.3736
The pupils use soap and water to wash their hands after visit the toilet	190	3.475	1.3466
Pupils do not wash their hands with soap after defecation due to unavailability of soap	190	2.170	1.3266
The pupils cleaning the toilets facilities everyday	190	2.180	1.0455
The toilets accessible to all pupils in the school	190	2.150	1.3736
The drinking water from the main source improved for pupil's health	190	3.480	0.7372
The toilets that girls are using are separated from boys to ensure privacy	190	2.435	0.8829
There is hand washing facilities near to the toilets for the immediately hand cleaning after visiting the toilet	190	4.401	1.1129
The drinking water from the main source currently available at the school	190	1.850	1.0233
<b>Average</b>	<b>190</b>	<b>2.6890</b>	<b>1.15845</b>

**Source: researcher 2020**

Table 4.3 above shows the practices of pupils regarding the use of water, sanitation, and hygiene facilities in primary school as follows;

“Are the pupil's drinks water from the main source provided by the school” the overall mean score and the standard deviation are 2.0950 and 1.3620 respectively, means that the mass of the pupils agreed that they are drinking water from the main source provided by the schools. The schools have few water taps, but can't hinder the pupils from getting the water from the taps at both schools under study. This finding concurs with the finding obtained by *Grossi et al., (2016)* In Europe conducted the study concerning the situation of water and hygiene in schools in their study they revealed the school provides the clean water for washing and drinking that in turns helps to reduce typhoid 51%, reduce diarrheal morbidity and respiratory infections to pupils.



“Do activities such as reminders and posters drawn/undertaken near the toilet for hygiene promotion at schools” the finding reveal with the overall mean score and the standard deviation of respondents were (2.6540) and (1.3736) respectively, means the mass of the pupils who filled the question had no answer or undecided on the advertisement such as reminders, and posters hanged at a critical point for hygiene promotion made in their respective schools. However, the researcher observed one poster at Ugindoni primary school wall that is not clearly seen this might be due to the fact that the rain, delete the drawings that encouraging hand washing practice in school. While in Vijibweni primary school there is only one poster at the toilet’s wall. The Research finding concurs with the results of *Grossi, et al., (2016)* done in Europe concerning the awareness of water, sanitation, and hygiene adverts in schools. In their findings, they revealed that many of the problems reported related to inappropriate planning and investment in the advertisement of billboards in their school compounds. Since there are no activities such as reminders and posters hanged at critical points for hygiene promotion at school.

Regarding the question “Are the pupils use soap and water to wash their hands after visiting the toilet” the finding overall mean score and standard deviation were (3.4750) and (1.0455) respectively. This means that pupils disagreed on the use of soap and water to wash their hands after visiting the toilet; this is because there were no soaps at toilets in both schools as observed by the researcher in both schools. However, hand washing with soap helps to reduce diarrheal morbidity and respiratory infections to pupils. This research findings concur with findings obtained by *Joshi, & Amadi, 2013*, in the United States of America the uses of water and soap to wash their hands whenever they visit the toilets, 14.8% of students reported that washing their hands after defecation and only that actually following this practice. Hand hygiene studies have indicated that children with proper hand washing practices are less likely to report gastrointestinal and respiratory symptoms *Snow et al., (2008)* in America.

“Are the pupils drink water from the main source provided by the school” the research finding reveal with the overall Mean Score 2.0950 and the standard deviation of 1.3466, this means that, the pupils agreed that they drink water from the main source provided by the schools although the researcher observed in Vijibweni primary school some pupil’s buy the drinking water from the canteen and others are coming with it from their homes because some pupils are forced by their parents to carry it and others are scared sometimes they might find no water supplied at schools water taps, also in Ugindoni primary school the pupil’s do the same. The research finding concurs with the finding obtained by *Connolly et al., (2004)* that access to safe drinking water,

adequate sanitation for excreta disposal, and management of medical and other solid waste can reduce diarrheal disease, like typhoid fever, vector-borne disease, and scabies.

Regarding the question “Pupils do not wash their hands with soap after defecation due to unavailability of soap at toilet” the finding reveal with the overall mean score and the standard deviation is 2.1800 and 1.0455 respectively, pupils agreed that they do not wash their hands after defecating due to unavailability of soap at toilet and a water point, this is because the school administration didn’t provide soaps at toilets in which hand washing practices are discouraged by the absence of soaps and this can highly impose the pupil’s health at risks, also pupils take the hygienic issues as a simple issue and don’t take it as the part of their personal hygiene for their healthy life. This finding concurs with the finding obtained by O’Loughlin *et al.*, (2006) In Ethiopia, revealed that lack of resources such as soap and water, as well as inadequate sanitation facilities might be the main reasons why children do not wash their hands, overall in rural Ethiopia, only 8% have access to adequate sanitation facilities, In the rural Amhara region of the country, only 21% of latrines had hand washing facilities, none of which contained soap, and less than 4% of households had access to adequate sanitation facilities.

“Are the pupils cleaning the toilets every day” the finding reveal with overall mean score and the standard deviation is 2.1500 and 1.3736 respectively, this means the pupils are cleaning toilets every day at both schools, regardless of cleaning the toilets every day the researcher observed stinking condition of the toilets because the cleaning is done once per day which is morning time this is because the school set the time table to be followed by the pupils. The proper cleanliness of the toilets helps to ensure the health welfare of the pupils and teachers and reduce the number of absenteeism at schools. The finding concurs with the finding obtained by *Josh & Amadi*, (2013) in the United States of America (USA) found that by (80%) hygiene and sanitation practices such as cleaning the latrine, and use of clean latrine had significantly reduced absenteeism rate in school-age children also had a considerable impact on reducing diarrhea to improve the pupil's health.

Regarding the question “Are the toilets accessible to all pupils in the school” the finding revealed with the overall mean score and standard deviation were (1.8101 and 2.3620) respectively, the pupils agreed on the physical reach of the toilet to all pupils even children in school, this means the toilets were built in a way of supporting access to every member of the schools. But the researcher observed that toilets are not enough in terms of numbers to cover all pupils especially during break times at both schools as shown in figure1 below. The finding concurs with the

finding obtained by *Pilliteri* (2011) in Malawi conducted the study concerning WASH facilities at schools showed that toilets seemed to be adequate in number and accessible in some schools; that allows the pupils with a disability to access the toilet service pupils at some schools (41.0%).

“The drinking water from the main source improved for pupil’s health” the finding reveals with average mean score and standard deviation of 3.480 and 0.7372 respectively, the pupils disagreed on the drinking the improved water provided by the schools for their health improvement. However, the researcher observes some pupils are drinking the water from the school taps regardless of its unimproved condition, the clean and improved water supply equipment such as water taps and tanks; enable the prevention of dust related particles to allow friendly environment for pupils at school. This finding concurs with the finding obtained by UNICEF; (2015) in USA conducted research in different schools and revealed that; globally, the 69% of schools had an improved source of drinking water with water available, and therefore classified as providing a limited basic drinking water service, It is therefore estimated that over 850 million children in Europe lack access the clean water at their schools for drinking and contribute to eruption of water borne diseases rate by 50%.

“The toilets that pupils using are separated from each other to ensure privacy” the finding overall mean score and standard deviation were (2.4350 and 0.88299) respectively, means the pupils agreed on the privacy resulted from using different toilets segregated by walls between boys toilets and girl toilets. The school ensures the pupils privacy and creating the self esteem environment for girls since they require more privacy than others. The finding concurs with the finding obtained by *Pilliteri* (2011) in Malawi concerning WASH facilities at schools showed that toilets are adequate in term of numbers, differentiated by walls between boys and girl toilets, the doors don’t have open space in its structures and ensures the privacy to the users.

The question regarding “hand washing facilities near to the toilets for the immediately hand cleaning after visiting the toilet” the study findings revealed with average mean score and standard deviation of 4.401 and 1.11292 respectively, means that the respondents strongly disagree on the availability of hand washing facility near the toilets, in addition the researcher observation shows there the water point located a little far from the toilets and makes others refuse to wash their hands after visiting toilets due to laziness habit and distance looking for hand washing point. This finding concurs with the finding obtained by The Global Public-Private Partnership for hand washing facilities, which included several African countries, reported that only 17% of the participants washed their hands after using the toilet due to absence of hand

washing points, while 10% used only water that they carry from home for drinking (World Bank, 2013).

Regarding the question “The drinking water from the main source currently available at the school” the finding overall mean score and standard deviation were 2.4100 and 1.02330 respectively; the drinking water from the main source was available for the daily uses of pupils at school. The availability of drinking Water from main source which is drilling water for both schools is very important because it helps the pupils to access the drinking water services while they at school since they spend most of their time at school. The finding concur with the finding obtained by *Grossi et al., (2016)* In Europe conducted the study concerning the situation of water and hygiene in schools in their study they revealed the school provides the clean water for washing and drinking that always available at school this is because the school values the pupils health and the water related diseases is reduced by 63% at school reduce the absenteeism rate and improve the school performance by 54%.

**Generally;** The pupils of Vijibweni and Ugindoni primary school’s undecided with an average mean score and a standard deviation of 2.6890 and 1.15845 respectively, this means that they were not sure on the practices of WASH at both schools however they respond on the practices such as cleaning the school toilets every day, uses of separated toilets pupils, drinking water from the school tap and accessibility of toilets to all pupils in both schools. Creation of enabling environment by the school administrator will help to motivate the proper practices regarding WASH at schools so as to prevent the spreading of diseases and promote the schools performance for both schools.

#### **4.2.2 Strategies school administration has employed to improve WASH facilities in school and community involved in Kigamboni municipality**

The study sought to describe the Strategies school administration deployed to improve WASH facilities in school and community involved in Kigamboni municipality. Table 4.4 shows the summary.

**Table 4.4 Strategies school administration has employed to improve WASH facilities in school and community involved in Kigamboni municipality**

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The sex education such as menstrual hygiene management provided by teachers in the school	10	2.1100	1.32540

The written school policy and rules are in place to ensure accessibility of safe water	10	2.1500	1.37366
The school administration provides all users with hygiene facilities such as soap and adequate sanitation facilities	10	2.1100	1.32540
The measures are taken regarding water treatment at school for clean water availability	10	2.3400	1.11833
The school allocated budget for the maintenance of WASH facilities and services for the well-maintained facilities	10	2.6350	.84578
Are the school provide the waste disposal bins to toilets and emergency pad for girls	10	3.4400	1.20984
The school has WASH committee, such as director, community health or development agent, parents, teachers, student representatives for WASH promotion	10	2.5000	0.99243
The school WASH committee received WASH training for capacity building and knowledge improvement at school	10	3.500	1.18513
The regular cleaning of water points ensured at school level for safe provision of clean water	10	2.4800	1.30311
The school administration maintains the water facility and toilets to ensure the privacy and access of clean water	10	2.0950	1.36208
Average	10	2.521	1.20411

**Source: Researcher (2020)**

Table 4.4 above shows that strategies school administration has employed to improve WASH facilities in primary schools in the Kigamboni municipality.

“Are the sex education provided by teachers to the school” so as to attain the dignity, ability to attend and focus in class the overall mean score and standard deviation are 2.5350 and 1.4558 respectively, shows that pupils agreed, the sex education such as menstrual hygiene management education are provided to girls at school which enables the equal learning opportunities for girls during menstruation this also helps to reduce absenteeism to girls and improves the school performance and dignity. The finding concurs with findings obtained by *Alexander et al., (2014)* in Kenyan rural schools concerning meeting the needs of menstruating girls. In their study, they revealed that menstruating girls in these same rural they need the education concerning menstrual hygiene management and confidentiality in the toilet so as to ensure their dignity.

“Is a written school policy or rule in place to ensure accessible safe water” the overall mean score and standard deviation were 2.0850 and 1.2062 respectively, this means the mass of teachers agreed on the written policy and rules are in place to ensure the accessibility of safe water at schools. The policy helps to raise awareness of the importance of securing access to safe water and promote the student consumption of water. This concurs with finding obtained by *Deroo et al., (2015)* in Asia, concerning with Monitoring and evaluation of WASH in schools programs policy of WASH at school, in their study they revealed that WASH policies were in place that enables greater access to sustainable WASH in schools services as vital to improving health and educational outcomes and When menstruation begins, girls are more likely to don't miss the school due to the availability of WASH facilities and the privacy they provide.

“The school administration provides all users with soap and adequate sanitation facilities” the overall mean score and standard deviation were (3.5735) and (1.0455) respectively that mass of respondents not sure on the provision of soap and adequate sanitation facilities by the school administrators. The respondent's undecided on the provision of soaps at schools this concur with the findings obtained by *Vivas et al., (2010)* in Angolela Ethiopia, found that the school did not provide enough hygiene facilities (36.0%), and lack of soap at school lead to low the frequencies of hand washing with soap. Availability of soap, water, and latrines are essential for proper hygiene practices in school *Strinaet al., (2003)*

“The measures are taken regarding water treatment at school for clean water availability” the overall mean score and standard deviation were (1.4107) and (2.5800) respectively; means that the mass of respondents agreed on the measure taken concerning water treatment and regular cleaning of water points at school. By doing so enables to improve pupil's health reduce absenteeism and improves the school performance through the reduction of water contaminated diseases. This finding concurs with finding obtained by *Connolly et al., (2004)* in Provision of sufficient clean water (for which minimum agreed standards exist) at school helps to reduce water-borne diseases such as diarrheal disease, typhoid fever, vector-borne disease and scabies helps to reduce diseases and rate improves human health.

“The school allocated budget for the maintenance of WASH facilities and services for the well-maintained facilities” the overall mean score ad standard deviation was (3.4070) and (1.0179) respectively this implies that there is no assurance on the budget for the operation and maintenance of WASH services at the school since the mass of respondent's undecided on the question provided. the findings concur with the findings obtained by *Antwi-Agyei et al., (2017)*

in Tanzania concerning with WASH in school and the process of evaluating the National Sanitation Campaign, in their study revealed that poor planning and coordination, inadequate funding and budgeting, and a lack of spare parts for repairs and maintenance and proper operation was found to be the main challenge to improved WASH in schools in Tanzania.

The question regarding “Are the schools provide the waste disposal bins to toilets and emergency pad for girls to maintain the privacy” the study finding reveals with overall mean score and standard deviation of 3.4400 and 1.2098 respectively, this means the respondents disagree on the provision of waste disposal bins by the schools, In addition the research observation shows there were no waste disposal bins in girls toilets, this means whenever girls want to change their pads when they menstruate they have to take it to the dump where is a bit far from the toilets. This finding concurs with the finding obtained by *Deroo et al., (2015)* in Asia, conducted a study concerning Monitoring and evaluation of WASH in schools’ programs, in their study they revealed that greater access to sustainable WASH in schools’ services is vital to improve health and educational outcomes and When menstruation begins, girls are more likely to miss school due to insufficient WASH facilities and the privacy they provide.

The question regarding “The school has WASH committee, such as director, community health and development agent, parents, teachers, student representatives for WASH promotion in school” the finding overall mean score and standard deviation were 2.5000 and 0.99243 respectively, shows that the respondents agreed on the availability of school WASH committee that formed by community health, development agents, student representatives, parents and teachers for WASH promotion at school. The availability of this committee can easy influence the WASH activities at both schools to promote health, since the main beneficiary such as student representative; parents and teachers are the part and parcel of the committee, this means can present the challenges and needs of WASH at schools accordingly. This finding concur with the finding obtained by *Agberemi et al., (2009)* in *Nigeria* done the study concerning strategies the school administration employed to improve WASH facilities in school, different campaigns were employed that organized in community schools with the active participation the WASH committee, that comprised of; Representatives of Parents Teachers Association, Women Group, Head Teachers, Members of School Environmental Health Clubs; The campaigns roles involved educating the audience with songs and short drama on hygiene and sanitation practices, especially hand washing while the club members were also involved in hygiene promotion within the communities as follow up to the campaigns.

“The school WASH committees, received WASH training for capacity building and knowledge improvement at school” the finding overall mean score were 3.3500 and 1.18513 respectively, this means the respondents undecided on training received by the school WASH committee for capacity building and knowledge improvement. In addition, the school seems to have an active WASH committee because engagement of some members of SWASH committee, like teachers and student representative was poor and this might be resulted from poor provision of WASH training at schools and make the sense of ownership to be less and make the WASH issues to rely on the hands of pupils themselves. This finding concurs with finding obtained by the *Chatterley*, (2014) in Senegal, found that the school did not form the WASH committee for WASH promotion at school, had no timetable for proper cleaning of school toilets due to inaccessibility of cleaning water at school, that yield to improper WASH activities due insufficient knowledge at school and community level surrounded and resulted to poor attendance of pupils at school.

The research question “The regular cleaning of water points ensured at school level for safe provision of clean water” the finding overall mean score and standard deviation were 2.4800 and 1.30311 respectively, means the regular cleaning of water points, at Ugindoni and Vijibweni primary school was censured by the teachers on duty for proper supply of clean water for pupil’s health improvement. The proper cleaning of water points allows the conducive environment for clean water accessibility for better pupil’s health. This finding concurs with the finding obtained by *Ngoma*, (2014) concerning the condition of sanitation at schools in Zambia, revealed that the improved knowledge on water and sanitation and the associated hygiene practices can lead to improved condition of WASH at school and the adequate knowledge, positive attitude, and good practices played a vital role in disease prevention both at the personal and community levels which help promote the human health and increase the school attendance.

The question regarding “The school administration maintains the water facility and toilets to ensure the privacy and access of clean water” the overall mean score and standard deviation of 2.0950 and 1.36208 respectively means the school administrator maintains the water taps and structure, and toilets doors to ensure the availability of water and privacy at Vijibweni and Ugindoni primary school. However, the research observation shows some few water taps are not supplying water at schools due to lack of maintenance of WASH infrastructure at school. The finding concurs with the finding obtained by *Grossi, et al.*, (2016) In Europe conducted the study concerning with the strategies to improve the situation of water, sanitation and hygiene in schools. In their study, they revealed that WASH in schools is needs different strategies for



proper WASH practice, appropriate planning, proper maintenance and cleanliness, access to basic sanitation in schools is fully ensured in some countries in Europe that lead to proper improvement of pupil’s health at school and community at large.

**Generally;** The finding averages mean score and the standard deviation of (2.521) and (1.204) respectively means that, the strategies employed by the school administrator helps to improve health outcomes of the schools. Pupils with adequate WASH environment at schools are extra able to integrate the WASH education into everyday lives and can be advocates and agents for change for their families and the society toward health improvement and development as a whole.

**4.3 Determination relationship between effects of water, sanitation, and hygiene project interventions on improving health outcomes among primary school pupils in the Kigamboni Municipality, Tanzania was identified.**

Bivariate correlation coefficient (Pearson’s r) was used to compute the relationship between the dependent variable (improvement of health outcomes in primary school) and the independent variables (practices of pupils regarding the use of sanitation and hygiene facilities, strategies school the administration has employed to improve WASH facilities). The correlation coefficient was calculated to determine the strength of the relationship between the dependent and independent variables (Kothari, 2013).

**Table 4.5 Correlation analysis**

OBJECTIVES		1	2	3
1	Improvement health Outcome	Pearson Correlation Sig. (2-tailed) N	1  200	
2	practices of pupils regarding the use of sanitation and hygiene facilities in primary schools	Pearson Correlation Sig. (2-tailed) N	.600** .000 200	1  200
3	Strategies that school administration deploy to improve WASH facilities in school	Pearson Correlation Sig. (2-tailed) N	.980** .000 200	.980** .000 200
				1  200

Correlation is significant at the 0.01 level (2-tailed)  
Source: Author (2020)

Result from table 4.5 above shows that all independent variables (Practice of pupils regarding the use of sanitation and hygiene facilities and strategies school administrators employed to improve WASH facilities) were found to have positive significant correlation on improvement of health outcomes at (0.01) significance level. There was a strong significant correlation between practices of pupils regarding the use of sanitation and improvement of health outcomes in primary schools ( $r=0.60$ ,  $P < 0.01$ ). There was a strong and positive correlation between strategies school employed to improve WASH facilities and improvement of health outcomes at ( $r = 0.980$ ,  $p < 0.01$ ). The results indicate strategies that practice employed to improve WASH condition at schools leads to improvement of health outcomes.

## **5. Conclusion**

Based on the research findings, the researcher concluded that WASH project interventions help to improve the health outcome in primary schools however there is major challenges that are need to be resolved to ensure the pupils are studying in a friendly environment school performance, attendance, prevention of diseases, and the pupil's self-esteem, and the physical wellbeing of the school pupils and teachers as well, this is due to increasing number of pupils enrolled at school to every year with the same WASH infrastructure. The researcher recommends that, the government should influence the non government organization to participate and sponsor the implementation of WASH project activities in schools Also, the integrated approach by parents, school, and social media to enhance sanitation and hygiene practices could be more useful to spread the ideas faster for health improvement at schools

## **6.0 Acknowledgement**

The Author would like to begin by thanking almighty God for his grace throughout my academic journey, Dr.Frateline Kashaga, Dr.Nyakweba Bernard Oyagi, Prof, Mary A. Mosha, for his Dr Kiliza and Iddy Khalifa for their constructive comments and the entire administration of Kampala International University Tanzania and for his intellectual inputs. Dar es Salaam regional office, Kigamboni District Council, not only functioned as key informants but also provided the much-needed permit to access the school and local authorities.

## **8.0 References**

Agberemi; Ofem and Saidu, ( 2009). Mobilizing people for improved hygiene practices through hand washing campaigns in Nigeria. IN: Shaw, R.J. (ed). Water, sanitation and hygiene -

- Sustainable development and multisectoral approaches: *Proceedings of the 34th WEDC International Conference, Addis Ababa, Ethiopia, 18-22 May 2009*, 5p.p
- Alexander, K., Oduor, C., Nyothach, E., Laserson, K., Amek, N., Eleveld, A., & Ombok, M. (2014). Water, sanitation and hygiene conditions in Kenyan rural schools: are schools meeting the needs of menstruating girls. *Water*, 6(5), 1453-1466.
- Alexander, K., Oduor, C., Nyothach, E., Laserson, K., Amek, N., Eleveld, A., & Ombok, M. (2014). Water, sanitation and hygiene conditions in Kenyan rural schools: are schools meeting the needs of menstruating girls. *Water*, 6(5), 1453-1466
- Antwi-Agyei, P., Mwakitalima, A., Seleman, A., Tenu, F., Kuiwite, T., Kiberiti, S., & Roma, E. (2017). Water, sanitation and hygiene (WASH) in schools: results from a process evaluation of the National Sanitation Campaign in Tanzania. *Journal of Water, Sanitation and Hygiene for Development*, 7(1), 140-150.
- Blanton, E., Ombeki, S., Oluoch, G. O., Mwaki, A., Wannemuehler, K., & Quick, R. (2010). Evaluation of the role of school children in the promotion of point-of-use water treatment and handwashing in schools and households—Nyanza Province, Western Kenya, 2007. *The American journal of tropical medicine and hygiene*, 82(4), 664-671.
- Churchill, D. A., & Iacobucci, D. (2010). Market research. *Methodological Foundations*, 2
- Cooper, D. R., Schindler, P. S., & Sun, J. (2003). Business research methods.
- Connolly, M. A., Gayer, M., Ryan, M. J., Salama, P., Spiegel, P., & Heymann, D. L. (2004). Communicable diseases in complex emergencies: impact and challenges. *The Lancet*, 364(9449), 1974-1983. J.G., Measham
- Deroo, L., Walter, E., & Graham, J. (2015). Monitoring and evaluation of WASH in schools programs: lessons from implementing organizations. *Journal of Water, Sanitation and Hygiene for Development*, 5(3), 512-520.
- Grossi, V., Klimschak, E., Rechenburg, A., Shinee, E., & Schmoll, O. (2016). The situation of water, sanitation and hygiene in schools
- Jasper, C., Le, T. T., & Bartram, J. (2012). Water and sanitation in schools: a systematic review of the health and educational outcomes. *International journal of environmental research and public health*, 9(8), 2772-2787.
- Joshi, A., & Amadi, C. (2013). Impact of Water, Sanitation, and Hygiene Interventions on Improving Health Outcomes among School Children. *Journal of Environmental and Public Health*.
- Kothari, C. R. (2013). Research methodology: theory and techniques. *New Age*.

- O'Loughlin, R., Fentie, G., Flannery, B., & Emerson, P. M. (2006). Follow-up of a low cost latrine promotion programme in one district of Amhara, Ethiopia: characteristics of early adopters and non-adopters. *Tropical medicine & international health*, 11(9), 1406-1415.
- Pillitteri, S., P. (2011). School menstrual hygiene management in Malawi: More than toilets. Master of Science project, Cranfield University, UK.
- Strina, A., Cairncross, S., Barreto, M. L., Larrea, C., & Prado, M. D. S. (2003). Childhood diarrhea and observed hygiene behavior in Salvador, Brazil. *American journal of epidemiology*, 157(11), 1032-1038.
- UN, (2015). The Millennium Development Goals Report. Available online: [http://www.un.org/millenniumgoals/2015\\_MDG\\_Report/pdf](http://www.un.org/millenniumgoals/2015_MDG_Report/pdf) (accessed on 23 May 2018).
- UNICEF; WHO (2015). *Progress on Sanitation and Drinking Water Update and MDG Assessment*: New York, NY, USA, 2015; ISBN 978 92 4 150914 5. 2
- UNESCO. (2010). *World data on education: Malawi*, 7th edition, UNESCO-IBE, New York.
- URT. (2013). *National Water Policy (NAWAPO) 2013*. Dar es Salaam: Ministry of Water, United Republic of Tanzania.
- URT. (2009c). *Basic Standards for Pre-Primary and Primary Education in Tanzania*. Dar es Salaam: Ministry of Education and Vocational Training United Republic of Tanzania
- Vivas, A., Gelaye, B., Aboset, N., Kumie, 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.
- World Bank. (2017) *World Development Indicators; The World Bank Group*: Washington, USA