

January 2015

# Evaluation of School VIP Latrines and User Preferences and Motivations for Adopting Communal Sanitation Technologies in Zwedru, Liberia

Sarah J. Ness

University of South Florida, ness.sarah@gmail.com

Follow this and additional works at: <http://scholarcommons.usf.edu/etd>

 Part of the [Environmental Engineering Commons](#)

## Scholar Commons Citation

Ness, Sarah J., "Evaluation of School VIP Latrines and User Preferences and Motivations for Adopting Communal Sanitation Technologies in Zwedru, Liberia" (2015). *Graduate Theses and Dissertations*.  
<http://scholarcommons.usf.edu/etd/5751>

This Thesis is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact [scholarcommons@usf.edu](mailto:scholarcommons@usf.edu).

Evaluation of School VIP Latrine Design and User Preferences and Motivations for Adopting  
Communal Sanitation Technologies in Zwedru, Liberia

by

Sarah J. Ness

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Environmental Engineering  
Department of Civil and Environmental Engineering  
College of Engineering  
University of South Florida

Major Professor: James R. Mihelcic, Ph.D.  
Maya A. Trotz, Ph.D.  
Richard A. "Ran" Nisbett, Ph.D.

Date of Approval:  
April 16, 2015

Keywords: school sanitation, sub-Saharan Africa, Millennium Development Goals, sustainable  
development

Copyright © 2015, Sarah J. Ness

## ACKNOWLEDGMENTS

I would like to acknowledge and thank my thesis committee: Dr. James R. Mihelcic, Dr. Maya A. Trotz, and Dr. Richard A. “Ran” Nisbett. Dr. Mihelcic, thank you for providing constant guidance and motivation. Your dedication and mentoring has encouraged me to develop personally and professionally; I’m honored to have had the opportunity to learn from you and grateful to have you and Karen in my life. Dr. Trotz, thank you for your enthusiasm, contributions to my thesis, and for expanding my understanding of sustainability. Dr. Nisbett, thank you for supporting my field research, for offering a unique view to my thesis, and for sharing my love for the beautiful country and people of Liberia.

Thank you to the Peace Corps Liberia staff and all the individuals that sustained my invaluable experience in Liberia. Thank you to all the faculty and students at Tubman Wilson Institute and J.C. Barlee Elementary, including Mr. Brown K. Bardee, Mr. Isaac Q. Fredricks, Mr. Ben B. Roberts, Joe Farley, Brickson Weah, and Deborah Wallace. Caraline Murphy, my fellow USF Peace Corps Volunteer in Liberia, thank you for always being there when I needed to talk. Finally, to my family, both American and Liberian, thank you for your unconditional love and support.

This material is based upon work supported by the National Science Foundation under Grant No. 0965743. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

## TABLE OF CONTENTS

LIST OF TABLES .....	iii
LIST OF FIGURES .....	iv
ABSTRACT .....	vi
CHAPTER 1: INTRODUCTION .....	1
1.1 Global Sanitation .....	1
1.2 Liberia Background .....	2
1.3 Research Motivation .....	4
1.4 Research Objectives .....	6
CHAPTER 2: LITERATURE REVIEW .....	8
2.1 Global Sanitation .....	8
2.1.1 Improved and Unimproved Sanitation .....	12
2.2 Sanitation in Liberia .....	13
2.3 Ventilated Improved Pit (VIP) Latrine .....	17
2.3.1 VIP Latrine Design Criteria .....	18
2.3.2 Alternating Twin-Pit VIP Latrines .....	23
2.4 Water, Sanitation, and Hygiene (WASH) in Schools (WinS) .....	24
2.4.1 Latrine Design in Schools .....	26
2.5 Latrine Adoption and User Preferences .....	31
CHAPTER 3: METHODS .....	34
3.1 Community Description .....	34
3.2 Surveys .....	39
3.3 Observations .....	44
CHAPTER 4: RESULTS AND DISCUSSION .....	46
4.1 Design and Construction of School VIP Latrines .....	47
4.1.1 Vent Pipe Design .....	47
4.1.2 Superstructure and Entranceway Design .....	48
4.1.3 Cover Slab, Drop Hole, and Pit Design .....	50
4.1.4 Ratio of School Population to Latrines .....	50
4.1.5 Siting and Location of Latrines .....	53
4.2 Socio-demographic Data .....	54
4.3 User Preferences and Motivations .....	57
4.3.1 Latrine Cleanliness .....	59
4.3.2 Latrine Safety .....	62

4.3.3 Latrine Comfort .....	65
4.3.4 Open-Ended Survey Questions .....	68
4.3.5 Home Sanitation Technologies of School Population .....	72
4.3.6 Survey Limitations.....	74
4.4 Framework for Latrine Adoption.....	77
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS .....	81
5.1 Conclusion .....	81
5.2 Recommendations for Future Research .....	85
5.3 Recommendations for Study Site.....	86
REFERENCES .....	87
APPENDICES .....	91
Appendix A. Tubman Wilson Institute (TWI) Health, Sanitation, and Environmental Engineering Workshop Schedule and Information and Notes.....	92
Appendix B. Tubman Wilson Institute (TWI) Sanitation Facilities Operation and Maintenance (O&M) Plan.....	97
Appendix C. Permission for Reproduction of Figures .....	99
Appendix D. Study Approvals from IRB .....	104
Appendix E. Informed Consent and Assent Forms Approved by IRB.....	109
Appendix F. Staff and Student Survey Questions .....	115
Appendix G. Survey Data .....	117

## LIST OF TABLES

Table 1 Liberian sanitation coverage trends 1995 - 2012.....	14
Table 2 Summary of VIP latrine design criteria .....	22
Table 3 Guidelines for design of latrines in schools.....	28
Table 4 Liberia's Ministry of Public Works institutional latrine design criteria (obtained from The Republic of Liberia Ministry of Public Works, 2010) .....	30
Table 5 Distribution of student population by grade and school .....	35
Table 6 Summary of survey questions.....	42
Table 7 Ratio of students to school latrines in this study based on approximate student populations .....	51
Table 8 Ratio of students per latrines based on TWI survey respondents .....	52
Table 9 Summary of open-ended survey question responses (n = 709) .....	72

## LIST OF FIGURES

Figure 1	Map of Liberia.....	2
Figure 2	Components of the ventilated improved pit (VIP) latrine.....	17
Figure 3	Multicompartiment alternating twin-pit VIP latrine with four user stalls.....	29
Figure 4	Aerial image of TWI campus.....	37
Figure 5	J.C. Barlee and TWI VIP latrines located behind the school classrooms.....	38
Figure 6	School VIP latrine block with six stalls.....	38
Figure 7	Distribution of survey respondents by grade level/position at school (n = 709).....	54
Figure 8	Distribution of survey respondents by age (n = 709).....	55
Figure 9	Age distribution of TWI Senior High student survey respondents (n = 223).....	56
Figure 10	Survey responses to “Do you use the school latrines?” (n = 709).....	58
Figure 11	Survey responses to "If yes, how often do you use the school latrines?" (n = 604).....	58
Figure 12	Survey responses to "How clean are the school latrines?" (n = 709).....	59
Figure 13	Grade 5 survey responses for "How clean are the school latrines?" (n = 88).....	60
Figure 14	Grades 11 and 12 survey responses for "How clean are the school latrines?" (n = 129).....	60
Figure 15	Administration, faculty, and staff survey responses to "How clean are the school latrines?" (n = 29).....	61
Figure 16	Survey responses to “How safe are the school latrines?” (n = 709).....	62
Figure 17	Grade 5 survey responses to "How safe are the school latrines?" (n = 88).....	63
Figure 18	Grades 11 and 12 survey responses to “How safe are the school latrines?” (n = 129).....	64
Figure 19	Survey responses to "How comfortable are the school latrines?" (n = 709).....	65

Figure 20 Grade 5 surveys responses to "How comfortable are the school latrines?" (n = 88).....	66
Figure 21 Grades 11 and 12 survey responses to “How comfortable are the school latrines?” (n = 129).....	67
Figure 22 Administration, faculty, and staff responses to “How comfortable are the school latrines?” (n = 29) .....	67
Figure 23 Survey responses to "Where do you go to the bathroom at your house?" (n = 709).....	73
Figure 24 Framework of factors impacting adoption of communal school VIP latrines.....	77
Figure 25 Grade 5 survey responses to “How clean are the school latrines?” from students that said yes, they use the latrines (n = 52) .....	80



## ABSTRACT

This thesis has three objectives as follows: 1) to investigate VIP latrine design and establish if the communal school VIP latrines located on the shared campus of Tubman Wilson Institute (TWI) Junior and Senior High School and J.C. Barlee Elementary School were properly designed and constructed, 2) to explore the user preferences and motivations impacting the adoption of these school latrines, and 3) to develop a framework for factors that influence latrine adoption. These goals were formed by the author in response to her Peace Corps experience working at a high school in Zwedru, Liberia from August 2012 to August 2014 and her personal background in appropriate sanitation and environmental engineering.

To complete the first thesis objective, the author conducted a detailed literature review and then compared accepted guidelines for VIP latrines to the sanitation facilities located on the TWI campus. The literature review investigated proper design of ventilated improved pit (VIP) latrines, school sanitation guidelines, and recommendations for sanitation in Liberia. The research focus latrines were two blocks of six stall multicompartment alternating twin-pit VIP latrines. The author conducted observations of the communal school latrines in order to compare the design and construction of these specific latrines to accepted criteria and recommendations from literature. It was found that the latrine vent pipes, cover slabs, drop holes, and pit design all appear to be designed and constructed per national Liberian and international recommendations. However, the TWI school latrines do not comply with standards for several other latrine design criteria. The latrine superstructures are built with privacy walls located in front of the boys' and

girls' stalls and the entranceway doors do not have air gaps. These two features may impair critical odor-controlling air flow from the superstructure through the pit and out the vent pipe. The siting of the school latrines is also inconsistent with guidelines as the latrines are located too close to the classroom building and to the school's water pump. Finally, the ratio of people to latrines on the shared TWI/J.C. Barlee campus is higher than the recommendation of 20-40 students per latrine, or when necessary 60 students per latrine.

The second research objective was to investigate user perceptions of the communal latrines and identify factors that motivate latrine adoption on the Liberian school campus. The design deficiencies identified in the evaluation of thesis objective one were found to impact the user preferences regarding the school latrines. This is apparent from user comments in the surveys that were conducted with 709 participants (students from grades four to twelve, administrators, faculty, and staff) at the study site. User perceptions of the cleanliness, safety, and comfort of the school facilities were varied. For example, 51% of total respondents (n = 709) expressed that the school latrines were dirty or very dirty, while 48% claimed the latrines were clean or very clean. When asked about the safety of the communal latrines, 52% of survey participants said the sanitation facilities were not safe or very unsafe; 47% asserted that the latrines were safe or very safe. Survey participants also had mixed responses about the comfort of the communal sanitation technology: 51% of the 709 survey participants stated that the latrines were not comfortable or very uncomfortable, while 46% declared the facilities were comfortable or very comfortable. The open-ended survey questions allowed respondents to comment on positive and negative aspects of the communal school VIP latrines. Again answers included various responses, but several key themes arose, including smell and odor, latrine

construction components, presence of feces in and around the latrines, the use of the facilities by outside community members, and health impacts of latrine use.

The final thesis objective was to develop a framework of the factors that impact adoption of communal school latrines. The author originally assumed that user preferences and latrine adoption were directly correlated, but survey results suggest that the two factors may be independently influenced. This is based on the usage rates, 77% total survey participants stating that they use the latrines and 88% of these affirmative respondents explaining that they use the latrines daily, multiple times a week, or weekly. Although these adoption rates are quite high, satisfaction rates for latrine cleanliness, safety, and comfort are merely 50%, as previously described. VIP latrine design factors, like odor control and door construction, and communal sanitation facility characteristics, such as operation and maintenance, may prompt latrine adoption. Individual user traits, such as age, gender, and type and availability of household sanitation technology appear to have a lesser impact on latrine adoption. However, the grade level of the student respondents may have played a role in their responses because of the methods in which the survey was administered and the common practice of cheating.

Additional research should be conducted to further understand the factors that impact the adoption of communal sanitation facilities on school campuses. This study accomplished its three main research objectives, yet further research and practical applications must be applied to improve school sanitation in Liberia and worldwide.

## CHAPTER 1: INTRODUCTION

### 1.1 Global Sanitation

*“The importance of sanitation is indisputable. It is a crucial stepping stone to better health: sanitation offers us the opportunity to save the lives of 1.5 million children a year who would otherwise succumb to diarrhoeal diseases, and to protect the health of many more. It is fundamental to gender equality as it protects women’s dignity. And it is key to economic development: investments in sanitation protect investments made in other sectors, such as education and health, and bring measurable economic returns.”<sup>1</sup>*

In 2000, the United Nations (UN) established eight Millennium Development Goals (MDG) with the hopes of eradicating extreme poverty and improving basic quality of life for all people by 2015. Goal 7 was to ensure environmental sustainability, which included one target to halve the proportion of the global population without sustainable access to safe drinking water and basic sanitation. The 2014 Update Progress on Drinking Water and Sanitation by the WHO/ UNICEF Joint Monitoring Programme (JMP) states that the MDG sanitation target is unlikely to be met. In fact, worldwide in 2012, 2.5 billion people did not have access to improved sanitation, a decrease of only 7% from the 2.7 billion that lacked access in 1990 (WHO/UNICEF JMP, 2014a). In this same year, it is estimated that 280,000 diarrhea deaths were caused due to inadequate sanitation (Prüss-Ustün et al., 2014).

As the MDG 2015 deadline approaches, it is apparent that new goals and targets must be developed. The UN is now generating Sustainable Development Goals (SDG) which will build

---

<sup>1</sup> World Health Organization and United Nations Children’s Fund Joint Monitoring Programme for Water Supply and Sanitation (JMP). *Progress on Drinking Water and Sanitation: Special Focus on Sanitation*. UNICEF, New York and WHO, Geneva, 2008.

upon the successes, and improve upon the shortcomings, of its predecessor MDG. Generated by UN working groups, with input from numerous international consultants, 17 provisional goals have been proposed for the SDG, which will be officially introduced September 2015. Proposed goal 6 aims to ensure availability and sustainable management of water and sanitation for all (UN, 2014).

## 1.2 Liberia Background

This thesis research focuses on the design and user preferences regarding communal ventilated improved pit (VIP) latrines located on a school campus in Zwedru, Grand Gedeh County, Liberia, West Africa. Liberia is a coastal West African country bordering Sierra Leone, Guinea, and Cote d'Ivoire. A map of Liberia can be found in Figure 1. Although the country is petite, at just over 111,000 square kilometers, it is home to approximately 4.2 million people from diverse ethnic tribes. From 1989 to 2003, Liberia suffered two destructive civil wars. A peace agreement was signed and ended the war in 2003, but damage to the nation's economy and infrastructure remained (CIA, 2014).



Figure 1 Map of Liberia. The school latrines discussed in this research are located in Zwedru, Grand Gedeh County, near the Liberian border with Cote d'Ivoire. Source CIA, 2014 (Figure is from government website and is public domain).

In 2013, after ten years of reconciliation and rebuilding, Liberia was still classified in the low human development category of the UN's Human Development Index (HDI). In fact, the country was ranked 175 out of 187 countries and territories. HDI values are based on several basic dimensions of human development: long and healthy life, access to knowledge, and standard of living. In addition, Liberia placed 143 out of 149 countries for the Gender Inequality Index (GII), which indicates gender-based inequalities as shown through reproductive health, empowerment, and economic activity (UNDP, 2014). According to the World Bank, Liberia is one of the poorest nations with roughly 84% of the population subsiding on less than US\$1.25 per day (U.S. Agency for International Development, 2010). Additionally, the JMP estimates that only 17% of the total Liberian population used improved sanitation technologies in 2012. This Liberian statistic lags behind the already inadequate 30% coverage (in 2010) in sub-Saharan Africa and considerably behind the global MDG sanitation target of 75% improved sanitation coverage by 2015.

Liberia continues to face significant social and economic challenges. Insecurity in neighboring countries, particularly Cote d'Ivoire, has driven thousands of refugees into Liberia, causing increased strain on already deficient resources. In 2012, the United Nations identified Critical Humanitarian Gaps in an effort to provide essential services for host communities and refugees and strengthen government's capacity to meet long-term needs. Twelve projects were designed with proposed cost of US\$36.7 million, including US\$4 million allocated for water, sanitation, and hygiene (WASH) interventions (United Nations, 2013). Additionally, numerous non-governmental and humanitarian development groups are industriously working in the WASH sector (Schmitzer & Hall, 2014).

To compound challenges faced by Liberians, in 2014, the Ebola virus disease (EVD) catastrophically hit the country, along with neighboring countries, Sierra Leone and Guinea. As of June 7, 2015, the World Health Organization (WHO) had reported 27,273 cases and 11,173 deaths, of which approximately 4,800 deaths occurred in Liberia (World Health Organization, 2015a). Although decidedly a health problem, prevention of EVD can be ensured through proper sanitation and hygiene (World Health Organization, 2015b).

Throughout the country's complex history, Liberians have faced various trials. Although a fragile state caused by years of civil war, post-conflict challenges, and, now, a global health crisis, Liberia and its people are *trying*. Trying in the Liberian sense of the word – working diligently to improve their circumstances, persevering through hardship, and appreciating life.

### **1.3 Research Motivation**

The motivation for this research stems from the author's participation in the Peace Corps Master's International program, which allowed her to study Environmental Engineering at the University of South Florida and serve as a Peace Corps Volunteer in Zwedru, Liberia (Mihelcic & Hokanson, 2005; Mihelcic et al., 2006). The author's personal experiences and activities in Liberia, supported by her environmental engineering background, offered the research foundation. The author was assigned as a secondary education math and science teacher to the government high school, Tubman Wilson Institute (TWI) in Zwedru, Grand Gedeh County, Liberia. Zwedru is an urban center in the Southeast region of the country, bordering Cote d'Ivoire. The estimated population of Zwedru is 24,000 inhabitants, and can therefore be classified as urban according to the UN Statistics Division, which considers all Liberian locales of 2,000 or more peoples urban (UN Statistics Division, 2005).

During the author's two years in Liberia, she became integrated into Liberian culture, through both her involvement with the school community and through friends and neighbors in the larger, general community. Extending from her environmental engineering education and personal interests in appropriate, sustainable sanitation technologies, she coordinated and facilitated a "Health, Sanitation, and Environmental Engineering Workshop" for the TWI student health club in January 2014. During this workshop, approximately thirty-five health club students were taught the importance of sanitation, the existing VIP latrines were cleaned, and a new urinal was constructed. Also during this training, a detailed operation and maintenance plan for the school latrines and hand washing facilities was drafted by students and administrators. The Tubman Wilson Institute (TWI) Health, Sanitation, and Environmental Engineering Workshop Schedule and Information and Notes that were provided to workshop attendees are provided in Appendix A. The TWI Sanitation Facilities Operation and Maintenance (O&M) Plan that was developed during the workshop is provided in Appendix B. Following the workshop and her successful WASH collaboration with the TWI students and administration, the author decided to further investigate the sanitation technologies on campus by assessing the design and infrastructure, as well as the user preferences and opinions regarding the facilities.

This research is vital to international development efforts because many endeavors are currently focused on improving access to sanitation, in correlation with the MDG, and soon, the post 2015 SDG. Because of the focus on schools, this research is unique and provides insight into a sanitation setting that is not often examined in depth. The MDG sanitation targets aimed to improve household and private sanitation. However, as international development goals shift to the upcoming SDG, more consideration will fall upon schools and health centers (WHO/UNICEF JMP, 2014a, 2014b). Although agencies and governments are implementing



various sanitation solutions, the adoption and usage of the technologies heavily relies upon user preferences. The WASH sector is increasingly concentrating on behavior change as a conduit for improved sanitation and hygiene, but in addition, sanitation infrastructure must be properly designed, implemented, operated, and maintained in order to fulfill the needs of the target community (Bhagwan et al., 2008; Seymour et al., 2011; Seymour, 2013).

Although general guidelines exist, such as UNICEF's Water, Sanitation, and Hygiene (WASH) in Schools and Liberia's Ministry of Public Works institutional latrine design, they focus on technical design criteria, with little consideration for user preferences and school specific attributes (The Republic of Liberia Ministry of Public Works, 2010; Mooijman, 2012). In order to have an appropriate and sustainable sanitation technology, user preferences and technical design must both be considered and integrated together for the outcome to be successful. To date, little research has focused on understanding user preferences for sanitation technology and even less has been done to develop an approach to identify user preferences and attributes that impact acceptability of the design and operation/maintenance of sanitation technology (Seymour, 2013). No research was found specifically regarding user preferences of communal school latrines. Therefore, this research provides fresh insight as it investigates user preferences and acceptability of communal, school ventilated improved pit (VIP) latrines, in the urban city of Zwedru, Liberia and develops a framework to recognize factors that influence usage of school sanitation facilities.

#### **1.4 Research Objectives**

The goal of this research was to evaluate school latrine designs and user preferences in order to make recommendations and improve the efficacy of future school sanitation programs.

This goal encompassed three main research objectives:

1. To review and assess current literature on proper VIP latrine design, specifically communal school latrine design, and evaluate the VIP latrines located on the TWI campus to determine if the latrines were properly designed and constructed. Data collection for this objective was accomplished through a full literature review and field observation of the design, operation, and maintenance of the school VIP latrines.
2. To determine the user preferences and motivations that impact the adoption of communal VIP latrines on an urban, government school campus in Zwedru, Liberia. Methods for data collection included classroom surveys and observation of the latrine facilities. The data was analyzed to ascertain what VIP latrine design factors, communal facility factors, and personal user background factors impact the user preferences and adoption of the school latrines.
3. To develop a framework for user preferences and design factors impacting adoption of communal school VIP latrines. Factors were selected based on the detailed literature review and the author's experiences and data collected in Liberia. This framework can then be applied to enhance school sanitation technologies and programs to ensure that technical VIP latrine designs and user preferences mesh, creating sustainable and effective school sanitation programs.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Global Sanitation

In 2000, the United Nations (UN) established eight Millennium Development Goals (MDG) with the hope of eradicating extreme poverty and improving basic quality of life for all people by 2015. Goal 7 was to ensure environmental sustainability, which included a target to halve the proportion of the global population without sustainable access to safe drinking water and basic sanitation. The 2014 Update Progress on Drinking Water and Sanitation by the WHO/UNICEF Joint Monitoring Programme (JMP) states that the MDG sanitation target is unlikely to be met. Worldwide in 2012, 2.5 billion people did not have access to improved sanitation, a decrease of only 7% from the 2.7 billion that lacked access in 1990 (WHO/UNICEF JMP, 2014a).

The UN is now developing Sustainable Development Goals (SDG) that will be integrated with the objectives of the MDG and extend past 2015. Officially, the SDG will launch in September 2015. Working groups and international consultants, including Water Supply & Sanitation Collaborative Council (WSSCC), WaterAid, and the United States Agency for International Development (USAID), have prepared comprehensive recommendations for post 2015 water, sanitation, and hygiene (WASH) goals, targets, and indicators. There are currently 17 tentative SDG, with one (Goal 6) to “*ensure availability and sustainable management of water and sanitation for all.*” This goal includes a target of “*by 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to*

*the needs of women and girls and those in vulnerable situations.*” Other sanitation related targets for the goal include strengthening the capacity of governments and local communities to effectively manage sanitation activities (Mihelcic et al., 2009; UN, 2014).

There are differences between the MDG and the recommendations being made for the SDG in regards to WASH. For example, the MDG targets are focused on the household level; community settings were not considered, thus WASH infrastructure and hygiene programs at schools were not prioritized. In contrast, it has been suggested that the post-2015 WASH targets go beyond the household. A wide range of settings, including ‘high use’ (schools, markets, transit hubs), ‘high risk’ (health facilities, detentions centers), and ‘special case’ (mass gatherings, refugee camps) locales were considered by consultants and schools and health centers were deemed priorities (WHO/UNICEF JMP, 2014b)

In addition, the MDG define improved sanitation as one that hygienically separates human excreta from human contact. This is discussed in depth in the following literature review, but it is important to note that shared facilities are not considered improved. However, it is proposed that the SDG focus on adequate or basic sanitation as a target. Basic sanitation is defined as facilities that effectively separate human excreta from human contact, similar to improved sanitation, but it also allows for shared facilities. A facility may be classified as basic sanitation when shared by no more than 5 families or 30 persons, whichever is fewer, and the users know each other (WHO/UNICEF JMP, 2014b). In 2008, leading sanitation experts, including Duncan Mara, recommended a concept dubbed the New Paradigm, in which water supply and sanitation should be provided to groups of households, rather than individual private homes. This proposal was reinforced by pro-poor studies and the notion that sanitation is an economic advantage more so than simply a right (Mara, 2013). In fact, a study conducted in

Tanzania found that of 341 latrines sampled and tested for *E. coli*, the shared facilities were the least contaminated (Exley et al., 2015). The definition modification between the MDG and SDG reflect the shifting attitudes and drive to provide universal adequate sanitation.

Over the past twenty years, sanitation development has transitioned from large-scale, supply-driven programs towards demand-driven solutions that account for user preferences and behaviors. With this archetype shift, it is imperative that sanitation technology engineering design be incorporated into planning, implementation, and operation/maintenance strategies. These project stages must also incorporate educational training, capacity building, and provide a sense of inclusion on behalf of the end users and target populations (Seymour, 2013). In 2013, Mara stated:

*“... beneficiaries should be involved in the sanitation planning process ab initio and to the extent that they, and they alone, should choose which sanitation solution they wanted from a range of solutions that were financially, physically, hydrogeologically, and institutionally feasible in their local context.”*<sup>2</sup>

With a coordinated multifaceted technical and social approach, that includes, from the beginning, beneficiary involvement, sanitation projects will have higher user acceptability rates and therefore more successful and sustainable sanitation solutions.

Globally, standard engineering designs for household and institutional VIP latrines are common, but these plans rarely consider behavioral, cultural, or environmental factors specific to project sites that may impact usage. Increasing user input through participation, in all stages of project preparation and delivery, can motivate sanitation ownership and acceptance. Capacity building and inclusion into decision making processes encourage users to comprehend the importance of sanitation, thus leading to sustainable sanitation services with higher adoption

---

<sup>2</sup> Mara, D. (2013). Pits, pipes, ponds – and me. *Water Research*. 47 (7). pp. 2105-17. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23490108>.

rates (Seymour, 2013). Connections between health and sanitation can be easily understood when effective educational workshops and community-led total sanitation (CLTS) triggering activities are implemented (Government of Liberia National Technical Coordinating Unit, 2012). Additionally, when discussing sanitation, women's health, and privacy requirements, Liberians generally accept the correlation between human dignity and sanitation.

Although the importance of adequate sanitation in relation to health and dignity is widely accepted, sanitation's association to economic development is less broadly recognized. However, when examined, the connection between sanitation and economics is just as apparent. Economic costs associated with inadequate sanitation are considerable; the estimated consequence of failing to meet the water and sanitation MDG targets is estimated to be US\$38 billion, of which sanitation accounts for 92% (Minh & Hung, 2011). To elaborate, for each US\$1 invested into achieving the sanitation MDG, the return would be US\$9.1. For every US\$1 invested globally towards universal access to sanitation, US\$11.2 would be returned (Minh & Hung, 2011).

As the global population continues to increase, advancing access to improved sanitation worldwide remains a persistent challenge. If trends continue, the MDG sanitation target will not be met in 2015. Achieving this target would have resulted in 75% of the population utilizing improved sanitation technologies, an improvement from the 49% in 1990. Although approximately two billion individuals gained access to improved sanitation between 1990 and 2012, only 64% of the global 2012 population has access to these technologies (WHO/UNICEF JMP, 2014a). This leaves an 11% deficit in which the MDG sanitation target will fail. Incentivizing sanitation, by shifting notions from sanitation as a *right* to sanitation as an

*economic advantage*, will lead to a demand-driven market and thus, increase sanitation sustainability (Black & Fawcett, 2008; Mara et al., 2010; Seymour, 2013).

Sub-Saharan Africa remains far behind the curve in regards to access to improved sanitation. Global access to improved sanitation in 2012 was 64%. In stark contrast, as of 2010, only 30% (261 million) of the population used improved facilities in sub-Saharan Africa (WHO/UNICEF JMP, 2012, 2014a). Data illustrates that access to sanitation in sub-Saharan Africa highly correlates with wealth and residency in urban regions. However, fragile, low-income, sub-Saharan African countries, in which Liberia is classified, display only a 2% and 8% increase in improved sanitation coverage from 1990 to 2010 in urban and average total, respectively. Another fascinatingly troublesome statistic is that West Africa is the only region in sub-Saharan Africa that has not observed an increase in improved sanitation coverage from 1990 to 2010. While other regions have accomplished a minimum of 7% coverage increase, West Africa's improved sanitation coverage has remained 26% over the past twenty years (WHO/UNICEF JMP, 2012).

### **2.1.1 Improved and Unimproved Sanitation**

Because definitions of adequate sanitation can vary significantly among countries, the JMP developed a sanitation ladder with standard categories. An improved sanitation facility is a technology that "*hygienically separates human excreta from human contact.*" Such facilities include pit latrines with slabs, ventilated improved pit (VIP) latrines, composting toilets, and pour-flush systems connected to piped sewers, septic tanks, or pit latrines. The VIP latrine is the focus of this research. Although it is considered an improved sanitation technology, when the facility is public or shared among two or more households, it is no longer categorized as improved sanitation, but instead as unimproved sanitation (WHO/UNICEF JMP, 2014a).

Unimproved sanitation ranges from shared facilities, which would otherwise be classified as improved, unimproved facilities, to open defecation, in decreasing order of safe hygiene. Unimproved sanitation facilities are technologies that do not ensure hygienic separation of human excreta from human contact. Pit latrines lacking slabs or platforms, hanging latrines, and bucket latrines fall under this category. Finally, open defecation is the behavior of humans excreting feces in open fields, forests, bushes, open bodies of water, beaches, or other open areas. If feces are disposed of with solid waste, this may also be considered open defecation (WHO/UNICEF JMP, 2014a).

It is worth noting that this research specifically deals with VIP latrines at schools. Because school latrines are public facilities and shared among a large user population, there are different sizing guidelines and requirements that would make the latrines acceptable. School sanitation facilities would not be considered improved or unimproved based upon the same household or private facility standards. The design guidelines for acceptable school sanitation amenities will be discussed later in this Chapter.

## **2.2 Sanitation in Liberia**

Sanitation coverage in Liberia is incredibly insufficient. The JMP estimates that only 17% of the total Liberian population used improved sanitation technologies in 2012. This Liberian statistic lags behind the already inadequate 30% coverage (in 2010) in sub-Saharan Africa and considerably behind the global MDG sanitation target of 75% improved sanitation coverage by 2015. When solely urban Liberian populations (locations with 2,000 people or greater) are assessed, the coverage rises slightly to 28%. Shared facilities, which are not encompassed in the definition of improved sanitation, account for 29% of urban sanitation coverage in 2012. Other unimproved technologies and open defecation round out the JMP



estimates for Liberian urban sanitation coverage at 17% and 26%, respectively (WHO/UNICEF JMP, 2012, 2014a, 2014c). A summary of the JMP estimated trends for sanitation coverage in Liberia are provided in Table 1.

Table 1 Liberian sanitation coverage trends 1995 - 2012. Source WHO/UNICEF JMP, 2014c.

Classification of Facility	Urban Sanitation Coverage (%)		Rural Sanitation Coverage (%)		Total Sanitation Coverage (%)	
	1995	2012	1995	2012	1995	2012
Improved Facilities	26	28	3	6	13	17
Shared Facilities	26	29	10	19	17	23
Other Unimproved Facilities	30	17	18	8	23	13
Open Defecation	18	26	69	67	47	47

Along with the 2012 statistics for sanitation already discussed, the historical estimates for 1995 sanitation coverage are included in Table 1. The historical trend for open defecation in urban areas provides an alarming statistic. In 1995, 18% of urban populations in Liberia practiced open defecation. It is estimated that 26% of this same population practiced this dangerously unhealthy behavior in 2012 (WHO/UNICEF JMP, 2014c). Recalling the country's recent history, this shows an *increase* of open defecation in urban areas, providing a glimpse into how destructive the 14-year Liberian civil war (1989 - 2003) was and how long-lasting the effects of war are. Countrywide, infrastructure was irreplaceably damaged and many internally displaced people flocked to urban centers, particularly the country capital, Monrovia, where approximately 60% of the Liberian population now resides (U.S. Agency for International Development, 2010). This combination contributed to the increase of urban open defecation and the practical stagnation of improved and shared sanitation coverage in urban Liberia.

In addition to percentages, sanitation in Liberia can be viewed in relation to other development factors. Economically, poor sanitation costs Liberia an underestimated US\$17.5 million annually (2% of the national gross domestic product), of which US\$11 million are costs due to the continual practice of open defecation by 47 – 49% of the national population (Water and Sanitation Program, 2012; WHO/UNICEF JMP, 2014c). The World Bank sponsored Water and Sanitation Program determined that the construction of less than 350,000 latrines throughout the country could eliminate open defecation (World Bank, 2012). The US\$17.5 million estimate is based upon monetary costs of lost access time (US\$1.9 million) and health issues. In terms of health, there are direct healthcare costs (US\$7.1 million); along with productivity losses while sick (US\$80,000) and the negative impacts of premature death (US\$8.4 million). Records show that approximately 3,000 Liberians, including 1,800 children under the age of 5, die every year from diarrhea, an illness easily avoided by improving WASH infrastructure and behavior. The Water and Sanitation Program study likely underestimates economic costs from poor sanitation because many additional factors, including, but not limited to, epidemic outbreaks, funeral costs, water pollution, cognitive development, tourism, and excreta reuse, are difficult to quantify and estimate (Water and Sanitation Program, 2012). Socially, there is stigmatization, shame, and loss of dignity associated with open defecation in Liberia (Government of Liberia National Technical Coordinating Unit, 2012; Water and Sanitation Program, 2012).

Funding of WASH projects in Liberia is often overlooked or underfunded due to countless challenges the country encounters, including the recent Ebola crisis, poor road networks and supply management chains, inadequate nutrition and educational programs, etc. In 2013, UNICEF estimated US\$4.2 million emergency funding was required for WASH projects benefiting refugee and Liberian host communities in counties bordering Cote d'Ivoire, but only

23% of the requested funding was allocated (UNICEF, 2013). The Republic of Liberia established the Liberia Water Supply, Sanitation, and Hygiene WASH Sector Investment Plan for 2012 to 2017, created in consultation with the Ministry of Lands, Mines, and Energy, the Ministry of Public Works, the Liberia Water and Sewer Corporation, and the Ministry of Health. The plan envisions universal 100% adequate sanitation services in Monrovia, other urban centers, and rural communities by 2030. Financial estimates for these advancements are as follows. It is anticipated that US\$37 million is needed for investment in sanitation services in Monrovia alone, but current funding is a mere US\$4 million, leaving a deficit of US\$33 million. Urban sanitation improvements, encompassing awareness campaigns, public toilet construction, capacity building for local craftsmen to construct latrine slabs and septic tanks, and ambitious sludge treatment works, for 23 cities throughout the country have been estimated to cost US\$13 million; current, available funding is a modest US\$1 million. It is also estimated that US\$16 million is required for sanitation and hygiene services, including community-led total sanitation (CLTS) programs and institutional latrines for schools and health centers, for rural Liberian communities. Only US\$6 million is allocated towards these rural projects. Finally, strategies for institutional water and sanitation, including full school sanitation coverage within 10 years, and WASH Sector Capacity Development are approximately US\$48 million and US\$74 million, respectively, but only meager fractions (US\$11 million and US\$6 million) of funds are available. When totaled, Liberia's ambitious, and somewhat unrealistic, planned sanitation programs equal an estimated US\$188 million, but only US\$28 million funds are available, leaving a significant deficit of US\$160 million, or 85%, of funding yet to be obtained (The Republic of Liberia, 2013).

### 2.3 Ventilated Improved Pit (VIP) Latrine

Ventilated improved pit (VIP) latrines are adaptations of traditional pit latrines. The technology includes a basic pit, a superstructure, and a vent pipe, as displayed in Figure 2. The addition of the vent pipe aims to reduce the odors and flies that are often problematic with traditional pit latrines (Mara, 1984). VIP latrines also do not require water during operation in contrast to other improved sanitation technologies, such as sewerage wastewater collection and pour flush latrines, unless the user requires water for cleaning (Fry et al., 2008).

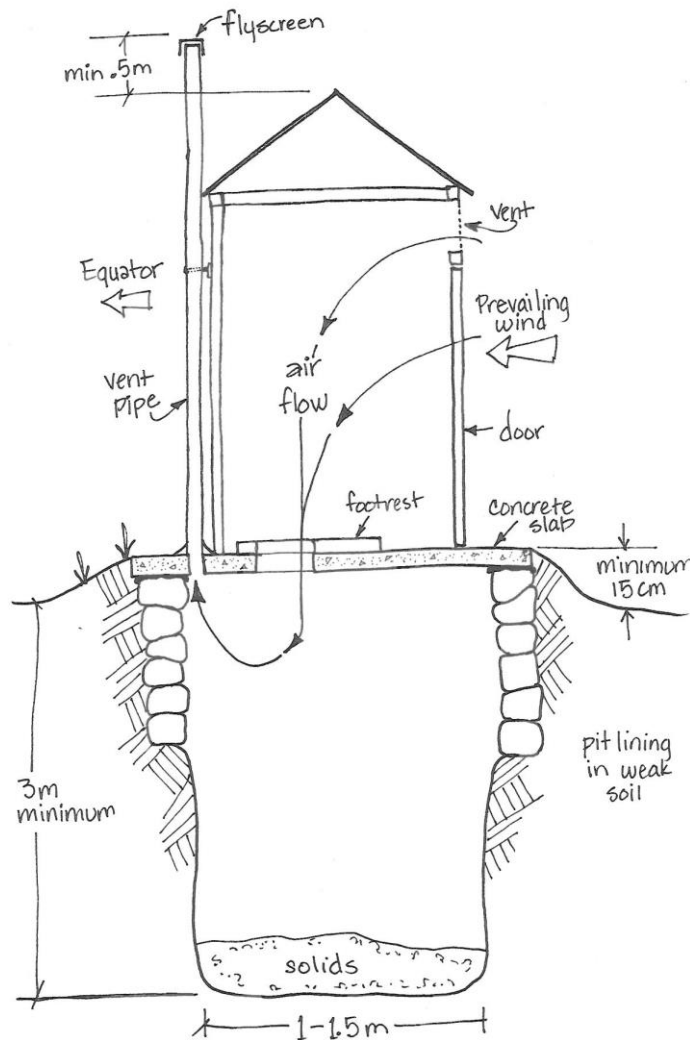


Figure 2 Components of the ventilated improved pit (VIP) latrine. Reproduced from Mihelcic et al. (2009) with permission from ASCE; artwork by Linda Phillips. ASCE permission provided in Appendix C.

### 2.3.1 VIP Latrine Design Criteria

The most unique component of the VIP latrine is the vent pipe. The vertical vent pipe extends from the latrine pit up to the atmosphere above the latrine superstructure. The pipe allows for ventilation of the structure and pit thus eliminating the bad odor that is generally associated with traditional pit latrines. VIP latrines should be designed to provide six air changes per hour through which air flows from the superstructure, into the pit, and then out the vent pipe (Mihelcic et al., 2009). This air flow movement, which is critical for ventilation and reducing malodorous environments, is depicted in Figure 2. The air that blows across the top of the vent pipe assists in this air circulation by generating pipe suction. Another factor impacting the air exchange rate is the buoyancy differences that are created by the temperature variations between the pit and the ambient air (Dumpert et al., 2009).

Because air exchange is a major factor in the effectiveness of VIP latrines, latrine design components that are impacted by wind are important to consider. One such factor is that the drop hole should remain uncovered when the latrine is not in use. This goes against traditional pit latrine operation, where the drop hole is supposed to be covered in order to reduce smells and control the fly population. However, with VIP latrines, the hole must be open in order to allow air flow into the pit; in fact, it can be harmful to VIP latrine effectiveness if the hole is covered (Mara, 1984). To maximize ventilation, Dumpert et al. (2009) recommend that the drop hole be covered during the early morning and evening hours when the ambient temperature is cooler than that of the pit, but then the cover should be removed during the warmer daylight hours.

Another design feature to consider is the superstructure of the VIP latrine. The general construction materials for the walls and roof are not technically important, but should be socially acceptable as the main purpose is to provide user privacy, comfort, and protection. To be

sustainable and appropriate, it is best for the structure to be made from locally available materials and to mesh with the social preferences. Because ventilation is vital, the structure should allow for optimal air flow through the entrance and into the pit. This is achieved by directly facing the entrance of the superstructure toward the prevailing wind and siting the VIP latrine a minimum of 2 meters (m) away from trees and high buildings that could limit air flow (Mara, 1984; Mihelcic et al., 2009).

Although ventilation is imperative for VIP latrines, the superstructure must also have a door that fully closes and remains closed while the latrine is not in use. The door or entranceway covering is necessary because the superstructure must provide sufficient shade so that flies are not attracted to exit the pit via the drop hole. Instead, flies should be attracted up the vent pipe towards the light, where they are then trapped by a fly screen and eventually die (Mara, 1984; Mihelcic et al., 2009). The entranceway covering should block most light from entering the superstructure; there should be no windows or openings in the structure, aside from the entranceway, and the inside of the latrine should be semi-dark (Dumpert et al., 2009). However, because air circulation is required, the design recommendation is that VIP latrines have an air gap, at the top or bottom of the latrine entrance, which is three times the cross-sectional area of the vent pipe (Mara, 1984). A spiral design is also an option for the VIP latrine superstructure so that light is minimized, the door requirement is negated (if the social preference is an open entranceway), and air can be channeled through the spiral for ventilation (Mara, 1984).

As previously mentioned, the distinctive component of a VIP latrine is the presence of a vent pipe. There are a variety of materials that could be used for this pipe, but polyvinyl chloride (PVC) pipe is common, although it significantly increases construction costs. An added benefit

to PVC pipe is that when a dark colored pipe is used, the vent pipe will heat faster and encourage air from the pit to rise out and increase air circulation. The vent pipe should be a minimum of 500 millimeters (mm) higher than the highest point on the superstructure roof. This enables the wind to pass unobstructed over the vent pipe and enable the air exchange from the pit. The diameter of the vent should be sized to allow for the required air changes based on the pipe material and the size of the superstructure, but the general recommendation is 150 mm minimum diameter for a PVC vent. Finally, the vent pipe is tightly fitted with a fly screen so that flies cannot enter the pit to breed and those that have already found their way into the pit are trapped and may not exit. The fly screens may be PVC-coated glass-fiber or stainless steel (Mara, 1984; Howard et al., 2002; Mihelcic et al., 2009; Dumpert et al., 2009).

VIP latrine cover slabs should be appropriately designed to support the weight of the superstructure, vent pipe, and user. Typically these slabs are reinforced concrete with two holes: one for the vent pipe and one as the drop or squat hole. To prevent the risk of children falling through the hole, the drop hole should be no larger than 200 mm width/diameter. These drop holes are often keyhole-shaped to provide a large enough opening, while still ensuring safety. The vent hole in the cover slab should be the same diameter as the vent pipe. Cover slabs should have a minimum 5% slope towards the drop hole to allow for drainage of urine and cleaning water (Mara, 1984; Mihelcic et al., 2009).

VIP latrines have underground pits that are used to collect excreta. The function of the latrine pit is to allow liquids to infiltrate into surrounding soil, while containing fecal solids to decompose in the pit through anaerobic digestion (Galvin, 2013). VIP latrine technology is designed as a dry system, with minimal cleansing water or greywater entering the pit; excessive amounts of liquid can impair the anaerobic processes necessary for the decomposition of solids.

As mentioned, pits should be designed to allow urine and wastewater to infiltrate into the bordering soil. Soils with permeability rates as low as 2.5 mm per hour, provided that clay is not present, are suitable for latrine construction. Because of this infiltration, it is essential that latrines are placed with consideration to avoid unnecessary groundwater contamination (Mara, 1984; Howard et al., 2002; Mihelcic et al., 2009).

The sizing and lining of these pits are key features for latrine performance and safety. Sizing latrine pits depends on accumulation rates that are influenced by environmental and cultural factors. Ideally, pit latrines should have a design life of at least ten years, but in practice latrines may have shorter effective years (3 – 5 years). The cross-sectional area of a latrine pit is typically 2 m<sup>2</sup> in efforts to eliminate dangerously large cover slabs. A typical diameter (circular pit) or width (square pit) is 1 – 1.5 m for a single household latrine; communal and institutional latrine pits may be larger as discussed later in this Chapter. Based on the cross-sectional area dimensions, the required pit depth can be calculated given the necessary volume, which considers design life and the solid accumulation rate. When sizing, a free space of 0.5 m directly below the drop hole should be included in order to avoid completely filling the pit up to the latrine slab. A general guideline is a minimum VIP latrine depth of 3 m, as was seen in Figure 2 (Mara, 1984; Mihelcic et al., 2009).

For user safety, pits should be lined, particularly in unstable soils that have potential to collapse. In these weak soils, pits must be lined, but a variety of materials, such as concrete blocks, mud bricks, stone rubble, and perforated oil drums for example, may be used depending on local availability. Only the upper portion, approximately 0.5 m, should be mortared, while the remainder should leave joints open to facilitate infiltration of the urine and liquid wastewater into the nearby soil (Mara, 1984; Mihelcic et al., 2009). When designing latrine pits, soil type is not



the only factor that must be considered. For example, a slope (15 cm minimum) must be provided to direct runoff and rainwater away from the pit. Additionally, social customs and dynamics, such as taking bucket baths inside latrines, must be accounted for (Mara, 1984; Mihelcic et al., 2009). Table 2 provides a summary of VIP latrine design criteria that has been discussed in this section.

Table 2 Summary of VIP latrine design criteria.

VIP Latrine Component	Typical Guidelines
Vent Pipe	<ul style="list-style-type: none"> <li>• Typically PVC, dark colored pipe</li> <li>• 150 mm diameter, minimum</li> <li>• Outlet 500 mm higher than highest point of the superstructure</li> <li>• Located 2 m away from tree branches and high buildings, minimum</li> <li>• Fly screen on outlet</li> <li>• Provide six (6) air exchanges (through superstructure to pit out the vent pipe) per hour</li> </ul>
Superstructure Entranceway	<ul style="list-style-type: none"> <li>• Door/covering required with air gap/vent, sized three (3) times larger than the cross-sectional area of the vent pipe</li> <li>• Facing prevailing wind</li> </ul>
Cover Slab	<ul style="list-style-type: none"> <li>• Reinforced Concrete with two (2) holes: drop hole and vent pipe hole</li> <li>• 5% slope towards the drop hole inside the latrine</li> </ul>
Drop Hole	<ul style="list-style-type: none"> <li>• Always open; not covered</li> <li>• Keyhole-shaped, 200 mm width, maximum</li> </ul>
Pit	<ul style="list-style-type: none"> <li>• Cross-sectional area 2 m<sup>2</sup>, maximum</li> <li>• Depth 3 m, minimum</li> <li>• Soil permeability 2.5 mm per hour, minimum</li> <li>• Mortared lining, top 0.5 m of pit</li> <li>• Ground surface sloped away from pit, 15 cm vertical difference, minimum</li> </ul>

### 2.3.2 Alternating Twin-Pit VIP Latrines

Alternating twin-pit VIP latrines are similar to single-pit VIP latrines, but instead of a solitary pit there are two, each with their own vent pipe and drop hole. The twin-pit VIP latrine has only one superstructure designed per the same VIP latrine superstructure guidelines as previously described. Inside the structure however, there will be two separate drop holes (each connecting to a different pit compartment) in the cover slab. Only one is in use at any given time, while the other is completely sealed and out of service. Cover slabs for these facilities are typically made in three or more sections of reinforced concrete. One slab is similar to the single-pit VIP latrine slab, but instead of two holes, it will have four: two drop holes and two vent pipe openings. The two additional slabs are removable covers that allow access into each pit so that they may be emptied when the excreta is no longer hazardous (Mara, 1984).

The idea behind the twin-pit VIP latrine is that it provides a permanent sanitation facility. When one pit fills (typically after one to three years), that drop hole is sealed and the contents are allowed to decompose while the other pit is used. When the second pit fills, the contents of the first pit, which have safely decomposed over a minimum of two (2) years, are removed and the first pit is placed back in service (Mara, 1984). This alternating process can be repeated indefinitely, thus twin-pit VIP latrines provide basic permanent sanitation. Because design life of twin-pit alternating latrines is indefinite, but storage time is only two (2) years minimum, the depths of the pits can be shallower than single-pit latrines. Similar to composting latrines, this feature makes the technology particularly suitable for sites with high groundwater tables or difficult soil conditions (Mehl et al., 2010; Gibson, 2014; Wilbur, 2014). Alternating twin-pit VIP latrines may have two separate pits or they may share a rectangular pit that is divided by a fully mortared wall that prohibits cross-flow of liquids and air. The pit must extend to the rear or

the side of the superstructure to allow pit entry, through the removable cover slabs, for excreta removal (Mara, 1984).

To provide basic permanent sanitation in institutional or public settings, Mara, along with the many international development agencies, endorses multicompartment alternating twin-pit VIP latrines. This technology is a slightly modified version of the alternating twin-pit VIP latrine and includes additional user stalls or cubicles, with adjoining pit compartments, to account for the larger user population (Mara, 1984; Leathes et al., 2011; Mooijman, 2012). Such latrines have been successful in various schools and will be examined in more detail later in this Chapter.

#### **2.4 Water, Sanitation, and Hygiene (WASH) in Schools (WinS)**

Water, sanitation, and hygiene (WASH) and school learning are interconnected. Children and adolescents learn best when they are healthy, but in schools, students are exposed to poor sanitation and hygiene conditions in overcrowded classrooms with little ventilation and inadequate WASH facilities. Due to these unhealthy environments, schools are often where children get sick. UNICEF estimates that 1.9 billion school days could be gained if the water and sanitation MDG are achieved and diarrheal disease occurrences are reduced (Mooijman, 2012).

Diarrheal disease and worm infections are two common diseases that impact school aged children and can be significantly improved through WASH interventions. Several studies show that improving hand washing with soap practices can reduce diarrhea-related school absenteeism by 30% (Mooijman, 2012; Naughton, 2013; Naughton et al., 2015). Another study shows that treatment of worm infections reduced absenteeism by 25% (Mooijman, 2012). Although these diseases can be easily prevented with adequate water and sanitation, only about one third of primary schools in developing countries have latrines or sanitation facilities (Mooijman, 2012).

According to the United Kingdom's Department for International Development (DFID),

improving school water and sanitation infrastructure not only improves student enrolment and completion rates, but also decreases teacher absenteeism (Leathes et al., 2011).

A contrasting study conducted at Kenyan schools by Greene et al. (2012) found that hygiene promotion and water treatment interventions did not impact the risk of *Escherichia coli* (*E. coli*), as an indicator of fecal contamination, presence on students' hands. In fact, when the intervention included the construction of new VIP latrines on campus, along with the hygiene promotion and water treatment program, the risk of *E. coli* existing on students' hands significantly increased, with the highest risk among girls. This study indicates that hygiene trainings are not always sufficient to induce behavior change and that improved sanitation infrastructure, in this case VIP latrines, may lead to increased contamination and spread of disease within schools (Greene et al., 2012).

UNICEF's Child Friendly School program incorporates WASH into Schools (WinS) and emphasizes that sustainable school improvement and interventions must provide water, sanitation, and hand-washing infrastructure, along with life skills education that focuses on proper hygiene behaviors with participatory activities. The education must also reach out to encompass families and the wider community, including local and national governments. Guidelines developed by UNICEF and the World Health Organization (WHO) recommend that schools design and construct "*child-friendly, gender-sensitive, well-made and sustainable facilities for sanitation, hand washing, water supply, compound fencing and solid waste collection*" (Mooijman, 2012).

A ratio of one toilet for every 20-40 children, depending on country standards and resources, is recommended by UNICEF for sizing school sanitation facilities. UNICEF defines sufficient toilet facilities as one toilet per 25 females and one toilet and one urinal per 50 males.

Other factors, such as the total number of students, the times children are permitted to use the facilities, drink water, and wash hands, presence of urinal, and the future growth of the school, can also impact the number of latrines required. Sanitation needs for students of various ages differ so UNICEF also recommends that separate toilet facilities be built for large schools with a wide range of student ages (Mooijman, 2012). However, because of overcrowded schools and lack of resources, a study funded by DFID found that a ratio of one latrine for every 60 students is more achievable in many situations (Leathes et al., 2011).

It is also important that boys and girls, especially adolescents, have individual facilities and that there is a method for young girls to dispose of sanitary pads without embarrassment. Female students often skip school several days a month, which amounts to 10-20% of total school days, during menstruation because of poor sanitation and washing facilities at schools (Mooijman, 2012). There is evidence to support that when schools provide a safe and private sanitation facility for girls, the enrollment and retention of these female students increases (Leathes et al., 2011).

Finally, a properly designed WinS intervention requires an operation and maintenance plan to be sustainable and fully effective. This plan must identify responsibilities for cleaning and maintaining facilities, as well as financial responsibilities and annual/biannual trainings for ensuring that the facility does not deteriorate. It is vital to the sustainability and adoption of the facilities that students, teachers, parents, and local authorities be involved in the development and enforcement of this operation and maintenance plan (Mooijman, 2012).

#### **2.4.1 Latrine Design in Schools**

Siting and designing school latrines are important matters. In order for the facilities to be successfully adopted by the entire school population, the technical design and construction must

take into consideration the preferences of the various beneficiaries. Incorporating and encouraging students (with a range of ages), school teachers and administration, parents, and local authorities to engage during all stages of sanitation intervention programming will strengthen community ownership, maintenance, and overall adoption of the amenities. School latrines should be located about 10 meters downwind of school classrooms so that they are close enough to be safe and secure, but also avoid unpleasant odors in classrooms. It is also recommended that boys' and girls' blocks of latrines be separated by at least 10 meters with a privacy wall (Leathes et al., 2011). In order to avoid contamination of a water supply, VIP latrines should be no closer than 30 meters from a well or water source (Mihelcic et al., 2009). In order to encourage usage, latrines should not be installed near other odorous areas, such as garbage dumps or animal pens (Mooijman, 2012).

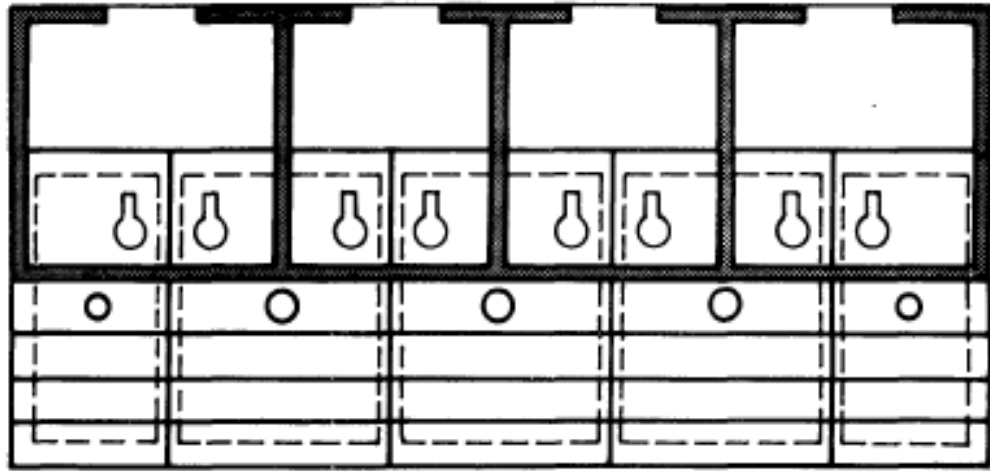
The DFID report also suggests that a system be put in place for daily maintenance and cleaning of school latrines. This system can be in the form of cleaners/janitors, individual students, or assigning classes cleaning duties. It is also important that the daily maintenance include a method for refilling soap and water for hand washing (Leathes et al., 2011).

Multicompartiment alternating twin-pit VIP latrines are common for school and institutional latrines. Multicompartiment alternating twin-pit VIP latrines are slightly transformed alternating twin-pit VIP latrines. Because there are multiple stalls, each pit, with the exception of the two end pits, serve two drop holes in adjacent compartments. The two end pits, which each connect to only one drop hole, are only half the size of the other pits in the system. During operation, it is important that both drop holes for a single pit be in service at the same time, while the second drop hole in a stall and its adjacent drop hole sharing the same pit be out of service and completely sealed. Aside from this slight adaptation, multicompartiment units are designed

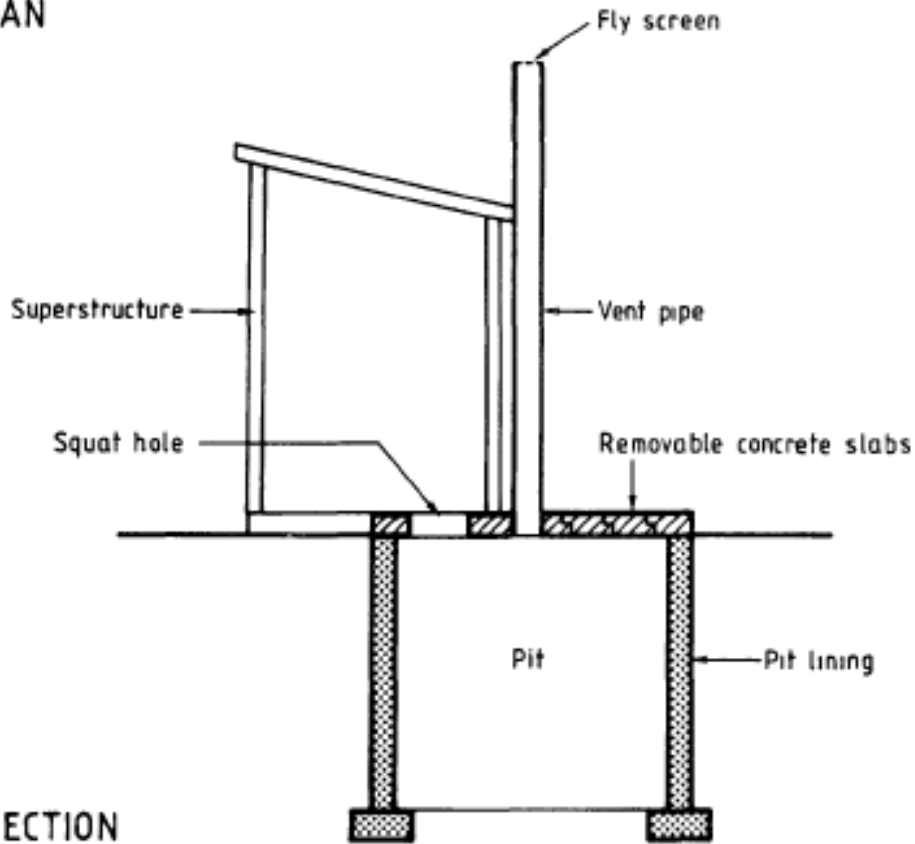
similar to single stall alternating twin-pit VIP latrines (Mara, 1984). A diagram of a four-stall multicompartment alternating twin-pit VIP latrine is provided in Figure 3. In the figure, the keyhole shape in the Plan view is the squat hole for the user and the circle is the vent pipe hole. In non-residential institutions, such as schools, Mara suggests 20 people per compartment for sizing the number of stalls and latrine blocks, thus the four-stall example shown in Figure 3 would serve 80 individuals (1984). A summary of the factors for sizing and siting communal school VIP latrines is provided in Table 3.

Table 3 Guidelines for design of latrines in schools.

Latrine Design Criteria	Recommendation
Number of students per one latrine compartment	<ul style="list-style-type: none"> <li>• 20-40 students, depending on country standards; Sufficient toilets: 25 females per one toilet, 50 males per one toilet and one urinal (UNICEF; Moojiman, 2012)</li> <li>• 60 students (DFID; Leathes et al., 2011)</li> </ul>
Minimum distance to school buildings/classrooms	<ul style="list-style-type: none"> <li>• 10 meters, downwind (DFID; Leathes et al., 2011)</li> </ul>
Minimum distance to well or water source	<ul style="list-style-type: none"> <li>• 30 meters, downhill (Mihelcic et al., 2009)</li> </ul>
Minimum distance between boys' and girls' blocks of latrines	<ul style="list-style-type: none"> <li>• 10 meters with privacy wall (DFID; Leathes et al., 2011)</li> </ul>



PLAN



SECTION

Figure 3 Multicompartment alternating twin-pit VIP latrine with four user stalls. Reproduced from “The Design of Ventilated Improved Pit Latrines” (Mara, 1984). © World Bank. License: [Creative Commons Attribution License \(CC BY 3.0 IGO\)](https://creativecommons.org/licenses/by/3.0/).



Liberia’s Ministry of Public Works (MPW) has national standards for water and sanitation services. The majority of the guidelines follow typical international recommendations, but some inconsistencies exist. For example, “alternating pit latrines” are endorsed by the MPW for institutional sanitation (The Republic of Liberia Ministry of Public Works, 2010). Examination of the standard drawings and specifications show that these designs are multicompartment alternating twin-pit VIP latrines. Liberian MPW design criteria, as written out in their specifications, for these facilities are outlined in Table 4.

Table 4 Liberia's Ministry of Public Works institutional latrine design criteria (obtained from The Republic of Liberia Ministry of Public Works, 2010).

VIP Latrine Component	Standard Design Criteria
Vent Pipe	<ul style="list-style-type: none"> <li>• 150 mm diameter in each pit compartment</li> <li>• PCV pipe</li> </ul>
Superstructure	<ul style="list-style-type: none"> <li>• Mud blocks or concrete blocks</li> <li>• Inside dimension of each stall/cubicle 1.2 m by 1 m, minimum</li> <li>• Front height 2.3 m and rear height 2 m</li> <li>• Door 0.7 m wide by 1.82 m high</li> <li>• Privacy walls constructed 1.4 m in front of structure</li> <li>• Corrugated zinc coated sheets for roofing on wooden frame</li> </ul>
Cover Slab	<ul style="list-style-type: none"> <li>• Each pit compartment covered by four slabs: one slab 65 cm by 130 cm with two drop holes; one slab 65 cm by 130 cm with hole for 150 mm for vent pipe; two 50 cm by 130 cm slabs</li> </ul>
Drop Hole	<ul style="list-style-type: none"> <li>• Keyhole-shaped, 150 mm diameter</li> <li>• Reinforced concrete, 7.5 cm thick</li> </ul>
Pit	<ul style="list-style-type: none"> <li>• Each internal compartment: width 2.3 m by length 1.3 m</li> <li>• Two end compartments: width 2.3 m by length 0.65 m</li> <li>• Sized to hold 2 years’ worth of excreta</li> <li>• Guideline depth 2.1 m</li> <li>• Fully lined with 15 cm solid concrete blocks from bottom of pit to 30 cm above ground</li> <li>• 15 cm solid concrete blocks dividing walls to separate compartments</li> </ul>

However, there are several dimensions with disagreement between the written specifications and the associated drawings. The MPW includes three institutional latrine drawings in their guidelines: 1) Alternating Pit Institutional Latrine Single Cubicle; 2) Alternating Pit Institutional Latrine with 4 Cubicles; and 3) Alternating Pit Institutional Latrine – 5 Cubicles. One dimension with a discrepancy between the drawings and specifications is the length of the two end pit compartments. In the specifications, these pits should be 0.65 m (half the length of the inner pits), but the drawings show the end pits as the same 1.3 m. The drawings also claim a scale of 1:1 with all dimensions in meters; the drawings are actually 1 cm to 1 m, but the descriptions are unclear (The Republic of Liberia Ministry of Public Works, 2010). These minor incongruities support the need for improved capacity at all levels in Liberia.

## **2.5 Latrine Adoption and User Preferences**

Many factors impact the adoption of sanitation technologies. Seymour (2011, 2013) analyzed various literature relating to user preferences and motivations regarding sanitation facilities in developing countries. She also conducted over 1,000 surveys in peri-urban areas of South Africa. Based on her research, she explains that the major drivers for sanitation usage are prestige, comfort/cleanliness/convenience, and health benefits, in decreasing level of importance (Seymour et al., 2011; Seymour, 2013). Note that health benefits, according to Seymour's findings, are not the primary motivating factor for latrine or sanitation adoption. With this knowledge, it is important that campaigns emphasize all beneficial aspects of adequate sanitation, not solely health. This will allow end users to derive personal sanitation solutions based on their needs, preferences, perspectives, and within their economic capacity.

For VIP latrine technology, there are various user opinions. In Botswana, Boleane and Ikgopoleng, as referenced in Seymour (2013), found that across 405 households with various

sanitation technologies; flush toilets (56%), VIP latrines (26%), and simple pit latrines (18%); 44% of respondents were satisfied with their latrines and did not intend to upgrade their facilities. Similarly, research completed by Whittington et al. (1993) in Ghana, shows that of over 1,200 households interviewed regarding willingness to pay for VIP latrines and sewer connections, only 54% of families without current access to sewer connections would raise their level of sanitation. This means that almost half of the households were satisfied with their VIP latrines. Of these satisfied VIP latrine users, just less than half indicated their preference for the technology was because water was not required for use (Whittington et al., 1993a, 1993b; Seymour, 2013). However, only 30% of respondents surveyed by Altaf and Hughes in Burkina Faso favored VIP latrines; this is in contrast to the 64% that selected pour-flush latrines. While pour-flush latrines were perceived as more modern and hygienic according to Burkinabe users, they did recognize the value of the waterless VIP latrines (Altaf & Hughes, 1994; Seymour, 2013). Another study referenced by Seymour (2013), conducted in peri-urban Kenyan regions by Schouten and Mathenge, interviewed 76 respondents regarding their communal sanitation facilities. It was discovered that, when rated on a scale of 1 to 10, all communal facilities, which include VIP latrines, received an average satisfaction ranking of 7.1. Nevertheless, communal VIP and pit latrines consistently, across various studies, have lower percentages of satisfied users than shared flush toilets (Seymour, 2013).

Little research has been conducted specifically in regards to communal *school* sanitation. Existing literature claims that usage of school latrines is generally associated with cleanliness and comfort. According to a study conducted in Kenya, students at schools that received VIP latrines, as part of an overall WASH intervention, reported only 15% discomfort using the school latrines, a major decrease from the baseline 58% discomfort that was reported prior to the

installation of the new VIP latrines. Only 4% of these same students reported that the school latrines were usually very dirty (another decrease from the baseline 52% prior), leading one to believe that the latrines were maintained and cleaned regularly (Greene et al., 2012). Although this data appears promising, further research relating directly to school sanitation, user preferences, and motivational factors associated with ownership, operation, and maintenance of communal school latrines must be conducted.

## CHAPTER 3: METHODS

Chapter 3 focuses on the research steps to collect and analyze the data required to address the main objectives of this study. As outlined in Chapter 1, these objectives are: 1) to investigate VIP latrine design in effort to ascertain if the communal school VIP latrines located on the TWI campus were properly designed and constructed, 2) to determine the user preferences and motivations impacting the adoption of these school latrines, and 3) to develop a framework relating design factors and user preferences to latrine adoption. To accomplish these objectives, both qualitative and quantitative data were collected. For the first objective, an in-depth literature review was conducted to establish proper VIP latrine design and existing guidelines for school sanitation. This information is outlined in Chapter 2. The school sanitation facilities were observed and technical notes were taken on the design and construction of the latrines to prepare for analysis. For the second objective, surveys were given to students, faculty, and staff to gather data on user preferences relating to the school VIP latrines. The final objective incorporates data from the literature review, observations, and surveys to develop a framework for communal latrine adoption.

### 3.1 Community Description

The latrines examined for this research are located on the Tubman Wilson Institute (TWI) Junior and Senior High School in Zwedru, Grand Gedeh County, Liberia. TWI is a government school with approximately 800 students and 20 faculty, staff, and administrators. The school is

afternoon session with classes running from 12:45 pm to 6:00 pm. In the morning, the same campus is used by J.C. Barlee Elementary school and Zwedru Kindergarten. J.C. Barlee Elementary school has roughly 800 students and 15 faculty members. Technically, the government school campus, shared by J.C. Barlee and TWI, is three buildings, one with seven classrooms, one with administration offices and a library, and one newly constructed building with two additional classrooms. Zwedru Kindergarten owns another building nearby with four classrooms. TWI has an arrangement with the kindergarten that allows TWI to use these classrooms in the afternoon. A breakdown of the student populations by grade for TWI and J.C. Barlee schools is provided in Table 5; the values are approximate because, although the school administration keeps enrollment records, the files are disorderly and inconsistent so it is difficult to obtain exact values. Additionally, many students drop out or irregularly attend class.

Table 5 Distribution of student population by grade and school.

School	Grade	Student Population
TWI (Senior High)	12	80
TWI (Senior High)	11	90
TWI (Senior High)	10	130
TWI (Junior High)	9	180
TWI (Junior High)	8	160
TWI (Junior High)	7	160
<i>TWI Sub-total</i>	-	800
J.C. Barlee (Elementary)	6	125
J.C. Barlee (Elementary)	5	125
J.C. Barlee (Elementary)	4	125
J.C. Barlee (Elementary)	3 <sup>1</sup>	125
J.C. Barlee (Elementary)	2 <sup>1</sup>	150
J.C. Barlee (Elementary)	1 <sup>1</sup>	150
<i>J.C. Barlee Sub-total</i>	-	800
<i>Total</i>	-	1,600

<sup>1</sup> Students in these grades did not participate in the user preference latrine surveys.

An aerial image of the campus is shown in Figure 4. The far left, upper building with the white roof is the newly constructed Tubman Wilson Institute (TWI) building with two classrooms; just below that, the building with the brown roof, is Zwedru Kindergarten; the U-shaped structure is TWI and J.C. Barlee classrooms; and the large square shaped building with the brown roof is the TWI administration offices and school library. The far right field is the school's football field.

The small rectangular structures (four total) behind the school buildings (located near bottom of image) are the ventilated improve pit (VIP) latrine blocks. The four latrine blocks each have six stalls, but one block is in disrepair and is therefore, unused (second structured in from the left). Of the remaining three blocks, one is allocated to each individual school: Zwedru Kindergarten (latrine block located on the far left), J.C. Barlee Elementary, and TWI. For the purpose of this study, the TWI and J.C. Barlee VIP latrine blocks were examined. The facilities for Zwedru Kindergarten, although similar in design and condition, were not included and no surveys were conducted with students or faculty from the kindergarten. The two latrine blocks located on the right side of the image are the focus of this study. The small square structure between the four VIP latrine blocks is the urinal facility that was constructed as a portion of the author's sanitation project with the TWI student health club.

The other buildings that have not been specifically identified are kitchens and gazebos. There are also two water pumps on campus, one located in the courtyard area of the U-shaped classroom building, belonging to TWI and J.C. Barlee, and the other is just to the right of the Zwedru Kindergarten classroom building. The campus, with the exception of the football field, is enclosed in a fence for security. However, the main gate was damaged, but there were plans to repair it.



Figure 4 Aerial image of TWI campus. Image is reproduced from GoogleMaps with Google © 2015 information.

The sanitation and hygiene facilities on the TWI/J.C. Barlee campus consist of two blocks of VIP latrines, several hand washing stations, and one water pump. A photo of the VIP latrine area behind the school, prior to the construction of the urinal, is provided in Figure 5. The VIP latrines are multicompartiment twin-pit VIP latrines; each stall has two drop holes with only one in use at any given time. Figure 6 shows the entire structure or latrine block, which has six stalls: two for boys, two for girls, and two for teachers. The boys' and girls' stalls each have a privacy wall in front of the entranceway. There are seven PVC vent pipes exiting from the pits behind the superstructure. In theory, one block of latrines is for J.C. Barlee, while the second is for TWI, but in practice, the latrines are not adequately operated or maintained so there is no distinction between TWI or J.C. Barlee owned facilities.





Figure 5 J.C. Barlee and TWI VIP latrines located behind the school classrooms.



Figure 6 School VIP latrine block with six stalls.

The latrines were funded by UNICEF and constructed by a local implementing partner. Unfortunately, the latrines were installed without the involvement of the school administrations or student health clubs. There was also no training provided regarding VIP latrine operation and maintenance. Because of the lack of inclusion in design and construction phases, TWI and J.C. Barlee schools do not have a sense of ownership over the latrines and, although the facilities are relatively new (one block was constructed in 2012 and the second in 2013), they are dirty, foul smelling, and poorly maintained. There is no regularly scheduled latrine cleaning conducted by the school janitors or students. Even during monthly work days, when students are required to clean the campus and cut the grass, the latrines are not cleaned or maintained. It was assumed that the school communities would instantly accept the facilities and provide financial and managerial oversight in the operation and maintenance of the amenities, but it is obvious that without involvement and participation in earlier stages, the school administrations do not feel responsible for the upkeep of the facilities.

### **3.2 Surveys**

Surveys were distributed to students, faculty, staff, and administrators to gather data relating to user preferences and perceptions of the communal school VIP latrines. Although the subject of the survey was the VIP latrines and not human subjects, the research methods for the surveys were reviewed and approved by the Institutional Review Board (IRB) due to the sensitive nature of surveying children. The IRB of the University of South Florida approved the study under IRB# Pro00015901 on January 21, 2014. An amendment, allowing the school principal to sign in lieu of parents for the informed consent process for the parental permission, was approved on February 24, 2014. The IRB of the University of Liberia approved the research methods on April 4, 2014. IRB documentation for the study is provided in Appendix D.

Participation in the survey was completely optional and each individual signed a consent/assent waiver (consent form if participant was 18 years or older; assent form if participant was a minor under the age of 18) prior to completing the survey. It was explained, in standard English and Liberian English, to each participant that the survey was optional, it did not impact students' grades or faculty employment, there was no monetary incentive, and the purpose for gathering data was for the author's graduate thesis and potential future projects to improve the sanitation facilities on campus. The script for informed consent can be found in Appendix E. The criteria for inclusion in the study was that the participant was affiliated, either by employment or as a student, to TWI or J.C. Barlee elementary school and that they were willing to participate. All faculty and staff for TWI and J.C. Barlee were included in the study. Students in grades four, five, and six from J.C. Barlee and all TWI students (grades seven to twelve) were encompassed in the research.

The author first surveyed TWI faculty, staff, and administration by approaching individuals and explaining the situation. Once the individual agreed to participate and signed the consent form, the author provided the survey. For faculty and staff, the survey was left with them to complete on their own time and return to the author at their convenience.

For students, the author conducted surveys by classroom, starting with the senior high TWI students. Because of fluctuating and inconsistent attendance rates during typical school weeks, the author administered student surveys during her personal class time (for grades eleven and twelve, where the author also served as the physics teacher) and during TWI exam week in May 2014 to ensure the highest participation rate. It is worthwhile to note that June is the end of the academic calendar in Liberia, which generally runs from September to June. Although numerous students register and enroll for classes at the start of each semester (September and

January), many students drop out of school and therefore the student population decreases by the end of the academic year. The student population estimates provided in the previous section are based on enrollment records, without consideration for students that have dropped out.

With permission from TWI administration, the author would enter a classroom, unannounced, while the students were available and awaiting another teacher. Each classroom generally had 70-100 students and the author would introduce herself and her research to get the full attention of the students. With the assistance of several responsible eleventh grade students selected by the author, the consent script and objectives of the research would be explained. Once the students verbally consented to participate, the consent/assent forms would be distributed for signatures. Once this form was signed, it would be collected and the individual would receive the school latrine user preferences survey. The students would have as much time as they required to complete the survey; generally taking about 20 minutes. If participants had any questions, they were able to ask the author, who would be present the entire time, or one of the eleventh grade students that aided the author. As is common in Liberian schools, participants often assisted their friends and peers so there was discussion throughout the course of the survey and sometimes individuals would simply copy from their neighbors' papers. Over the course of a few weeks, the author surveyed all TWI junior and senior high classes.

Once all surveys for TWI were complete, the author approached the J.C. Barlee administration. Again she surveyed the faculty and administration in the same manner as previously done with TWI faculty. Finally, she surveyed grades four, five, and six from the elementary school. These surveys were administered during typical school days (not testing week) in June 2014. Because these students were younger and unfamiliar with the author, who worked at TWI in the afternoon, but was not on campus during the morning elementary session,

a J.C. Barlee teacher would introduce the class to the author. With the aid of the same eleventh grade students and the J.C. Barlee faculty member, the author would explain the assent process and research objectives. Again, the assent forms would be distributed for signatures after the students had verbally agreed to participate. Once all assent forms were complete and surveys were distributed, the J.C. Barlee teacher would read the questions one by one, allowing time for the students to respond on their sheets. Through this guided process, the younger students had more structure and were able to ask questions and receive answers as a class, as opposed to the somewhat chaotic process that was often seen in the junior and senior high classrooms.

There were two versions of the survey conducted, one for faculty and another for students. The major difference between the two versions was the participant identification questions (age and grade or position in the school). The questions investigating user perceptions of the latrines were the same on both surveys. The queries related to cleanliness, safety, and comfort of the communal latrines, as these classifications were identified in the literature review as major factors that impact user adoption of sanitation technologies. These questions were formatted so that respondents could select their answer based on provided options (multiple choice). The survey also included open ended questions that allowed respondents to express their opinions and comments regarding the school VIP latrines. A summary of the questions is provided in Table 6. The two full survey forms are provided in Appendix F.

Table 6 Summary of survey questions.

No.	Survey Question	Answer Options
1	What is your gender?	<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>
2	What is your age?	Age ranges provided for selection
3 (Student Surveys)	What class are you in?	N/A

Table 6 (Continued)

3 (Faculty/Staff Surveys)	What is your position at the school?	<ul style="list-style-type: none"> <li>• Administration</li> <li>• Teacher</li> <li>• Staff</li> </ul>
4	Do you use the school latrines?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
5	If yes, how often do you use the latrines?	<ul style="list-style-type: none"> <li>• Time range provided for selection</li> </ul>
7	How safe are the school latrines?	<ul style="list-style-type: none"> <li>• Very Safe</li> <li>• Safe</li> <li>• Not Safe</li> <li>• Very Unsafe</li> </ul>
8	How comfortable are the school latrines?	<ul style="list-style-type: none"> <li>• Very Comfortable</li> <li>• Comfortable</li> <li>• Not Comfortable</li> <li>• Very Uncomfortable</li> </ul>
9	Please explain what is beneficial or good about the school latrines.	N/A
10	Please describe what is negative or bad about the school latrines.	N/A
11	Where do you go to the bathroom at your house?	Options provided for selection
12	Any additional comments regarding the school VIP latrines.	N/A

To analyze the collected data, the author entered all survey responses into an Excel spreadsheet. This survey data spreadsheet is available in Appendix G. Assessing the multiple choice survey questions was straightforward as standard response options were provided to the participants. However, interpreting the open-ended survey questions was more complex. In order to categorize common open-ended responses, the author identified keywords for various themes. The general themes were discovered by the author when she manually performed the data entry of survey responses into the spreadsheet for analysis. The main themes identified and discussed in the subsequent chapter include smell, latrine construction, presence of feces, use by

community, and health aspects. For each of these themes, several keywords were used to search and pinpoint the related survey responses. The keywords were recognized by the author based on the frequency of the word or set of words falling under a specific category or theme. For example, the keywords smell, smelling, odor, and scent were used to identify open-ended responses relating to the theme of smell. A table of the themes and keywords, along with the results of the responses, are provided in Table 9 in Chapter 4.

### **3.3 Observations**

Observations of the school VIP latrines were conducted by the author, formally twice and informally two to three times a month, from January to June 2014. For the formal observations, the author investigated the cleanliness and general condition of the facilities. She kept records of items such as presence of feces on the latrine slab, presence of a door lock on outside of entranceway, condition of inside door latch, presence of garbage/paper in the latrine stall, smell of the facility, presence of people using the latrines, and other notable observations. No formal observation form was utilized, but personal notes were recorded. During the first formal observation, notes regarding the technical design of the facilities, including number of stalls, pits, and vent pipes, presence of ventilation hole in entranceway, location of latrines in relation to water and classroom buildings, and general construction materials and layout of the facilities were recorded. During the informal investigations, the author would walk around the latrines to observe if any changes or maintenance had occurred.

Please note that observations were made by the author per the methods described. However, due to public health concerns stemming from the outbreak of the Ebola virus disease, all Peace Corps Volunteers (PCV) in Liberia were evacuated in August 2014. The author had the intention of conducting specific measurements and additional field research, including a

second set of surveys, until her scheduled departure in December 2014. Unfortunately, the evacuation disrupted these plans. The author was therefore unable to complete all measurements for the school latrine construction and siting. By utilizing photographic records, satellite images, and measurements made by another USF Master's International PCV, who lived in neighboring Nimba County, results and comparisons were made between the TWI school latrines and literature. Because latrines in both counties were sponsored by UNICEF and visually looked the same, it is assumed that the dimensions of the school latrines in Nimba County are similar to the latrines in Zwedru, Grand Gedeh County (Murphy, 2015).



## CHAPTER 4: RESULTS AND DISCUSSION

As previously discussed, this thesis has three objectives as follows: 1) to investigate VIP latrine design in an effort to ascertain if the communal school VIP latrines located on the TWI campus were properly designed and constructed, 2) to determine the user preferences and motivations impacting the adoption of these school latrines, and 3) to develop a framework relating design factors and user preferences to latrine adoption. This chapter examines the results of field observations and surveys and then correlates this data in relation to the thesis objectives. To accomplish objective one, the author has provided a comprehensive literature review in Chapter 2. In this chapter, field observations are used to evaluate the VIP latrines located on the TWI campus in terms of accepted design and construction as established in current literature. For objective two, data from user surveys is discussed and analyzed to expose what VIP latrine design factors, communal facility factors, and personal user background factors impact user preferences and adoption of school latrines in Zwedru, Liberia. Finally, based on results from objectives one and two, the author developed a framework for user preferences and design factors that impact usage of communal school VIP latrines. This framework satisfies objective three and provides a method to enhance sanitation technologies in the future by applying both critical user preferences and proper VIP latrine design to ensure sustainable and effective school sanitation.

## **4.1 Design and Construction of School VIP Latrines**

Chapter 2 reviewed standard guidelines for VIP latrine design criteria, including vent pipe features, superstructure and entranceway construction, cover slab and drop hole specifications, and pit sizing. The recommendations considered for VIP latrine design and construction, as summarized in Table 2, were collected from established organizations, including the World Bank (Mara, 1984) and Mihelcic et al., (2009). Also included in the review are parameters specific to WASH in schools from the United Nations International Children's Emergency Fund (UNICEF) and the United Kingdom's Department for International Development (DFID) (Leathes et al., 2011; Mooijman, 2012). These school latrine guidelines are reviewed in Table 3. Finally, Liberia's Ministry of Public Works (MPW) national standards for institutional latrines are discussed and provided in Table 4 (The Republic of Liberia Ministry of Public Works, 2010). The subsequent sections will compare each aspect of the TWI school VIP latrines to the guidelines examined in the literature review.

### **4.1.1 Vent Pipe Design**

As previously discussed, the vent pipes of the VIP latrines are critical to the effective operation of the technology. Each block of the multicompartment twin-pit VIP latrines at TWI has seven vent pipes. This is consistent with the proper design of a VIP latrine block with six stalls. The vent pipes are light grey PVC pipe and each one is covered with a fly screen. Although not a dark color, the PCV material is recommended in literature and the vital fly screen, to control fly populations, is present. The author was unable to verify in the field if the fly screens are in proper condition, without holes and tightly sealing the pipes, but from visible inspection of photos, they appear to be correct. Additionally, the author did not have the opportunity to measure diameter and heights of the vent pipes due to her unexpected departure

from Liberia due to the Ebola outbreak. Per international standards, the vent pipe outlet is supposed to be 500 mm higher than the highest point of the superstructure and located 2 m away from tree branches and high buildings. For the TWI latrines, the majority of the vent pipes extend above the highest point of the superstructure, but the actual height is uncertain. It also appears that the vent pipe outlet heights are inconsistent with each other, likely due to limited available resources. The latrines are located behind the school buildings and there are no trees obstructing the outlets of the vent pipes. Because dimensions of the pit and environmental data regarding wind patterns were not recorded, the amount of air exchanges provided by the vent pipes are indefinite. Overall, the vent pipes appear to be constructed per design specifications for VIP latrines.

#### **4.1.2 Superstructure and Entranceway Design**

There are two blocks of latrines on the shared TWI/J.C. Barlee campus. Each has six stalls (two for boys, two for girls, and two for teachers). Refer to Figure 6 in Chapter 3 for a photograph of one of the VIP latrine blocks. In conjunction with the MPW guidelines, the latrines are constructed of bricks, although it is unknown if the bricks are mud or concrete, and layered over with mortar. The roofs are corrugated zinc sheets with wooden frame. The author was not able to measure all the dimensions of the structure. Abiding by the MPW specifications, the school latrines have brick privacy walls installed in front of the boys' and girls' stalls. Although these privacy walls follow the national standards, international VIP latrine guidelines do not call for these privacy walls. DFID recommends a privacy wall to separate individual blocks of boys' and girls' latrines that should be located 10 m apart from each other. However, this is not how the TWI latrines were constructed because the same latrine block has stalls for both genders.

Another major aspect of the TWI latrine superstructure design that is inconsistent with VIP latrine design is the doorways. The school latrines have door coverings, which are recommended for VIP latrines, but they are missing the air gaps or vents. The air gaps in the doors are necessary in order to allow air flow through the superstructure, into the pit, and then out the vent pipe. This circulation of air is essential for the odor control of the sanitation facility. The missing air gaps in the door coverings and the privacy walls in front of the stalls obstruct air flow through the facilities and may be significant factors contributing to the foul odor of the school latrines. Although the air gap is missing from the door, the latrines are oriented correctly (towards the prevailing winds) so if the door and privacy walls were modified, the air circulation could be improved. Modifying the doors would be as simple as cutting the upper portion of the wooden door off to allow for an air gap between the latrine wall and the top of the entry door. This could be completed by a student that is skilled in construction and thus cost the school little to no expense. This minimal modification has the potential to significantly improve the VIP latrine air flow and odor control aspect of the VIP latrine operation.

There is another issue with the doors of the TWI latrines. Each stall has an inside latch to provide privacy when using the latrine and an outside lock to secure and protect the school facilities. However, when the author observed the latrines, only two of the twelve latrines were locked from the outside. Because of this, community members with no affiliation to the school would use the facilities. During an informal observation, conducted while the afternoon school was in session, the author observed a man from the community enter the campus and use one of the girl's latrine stalls. It is assumed that community members would use the school sanitation facilities more often during the non-school hours of the evening and early morning. This improper operation of the latrines increases the number of users and, when coupled with the

insufficient maintenance, results in poor and inadequate sanitation facilities. With the general community population using the latrines, rather than the intended school population, the facilities become, in a sense, public latrines that are neither owned nor operated by a qualified entity and would be classified as an unimproved sanitation facility. Additionally, many of the stall latches on the inside of the latrines were nonfunctional or missing pieces when the author observed the latrines. These broken latches may decrease user adoption rates and the overall safety of the latrines.

#### **4.1.3 Cover Slab, Drop Hole, and Pit Design**

Per twin-pit latrine design guidelines, each TWI latrine stall has two drop holes in the cover slab, with only one in use and the second sealed at any given time. The drop holes are key shaped. Assuming the dimensions are the same as the UNICEF school latrines in Nimba County, the length of the hole is 42 cm, the width is 4 - 4.5 cm, and the diameter is 23 cm (Murphy, 2015). This diameter is slightly larger than the 20 cm width maximum recommended by international VIP latrine design guidelines and the 15 cm diameter stated in Liberia's MPW specifications. The drop holes in operation remain uncovered at all times, adhering to VIP latrine operation guidelines. Behind the superstructure, the pits have removable cover slabs which allow for contents removal once the waste has decomposed, but Zwedru does not currently have a removal service. Dimensions and construction of the pit were not measured or recorded by the author.

#### **4.1.4 Ratio of School Population to Latrines**

Based on survey responses and estimated school populations, it was determined that there are too few latrines on campus. Table 7 summarizes the approximate number of students to

latrines given several various scenarios, including the full population (1,600 students) of both schools using the two latrine blocks, the population of a single school (800 students) using the two blocks, and the population of a single school using their one latrine block. The ratios are provided based on gender and total population.

Table 7 Ratio of students to school latrines in this study based on approximate student populations.

Gender	Ratio of Students to Latrines (1,600 Students <sup>1</sup> ; Use of Two Latrine Blocks <sup>3</sup> )	Ratio of Students to Latrines (800 Students <sup>2</sup> ; Use of Two Latrine Blocks <sup>3</sup> )	Ratio of Students to Latrines (800 Students <sup>2</sup> ; Use of One Latrine Block <sup>4</sup> )
Male (56%)	224 boys per latrine	112 boys per latrine	224 boys per latrine
Female (41%)	164 girls per latrine	82 girls per latrine	164 girls per latrine
All Students (100%)	200 students per latrine	100 students per latrine	200 students per latrine

1 Assuming Both Morning and Afternoon Session students together

2 Assuming Single Session (ie. only TWI afternoon session) students

3 As per common practice, assuming TWI and J.C. Barlee students use both VIP latrine blocks

4 As per theory and intent of donors who sponsored latrine construction, assuming each school owns one specific latrine block

Assuming that TWI and J.C. Barlee students (1,600 total students) use the two VIP latrine blocks (six stalls each, with four latrines per block assigned to students, thus eight student latrines total) directly behind the classroom building, and not the Zwedru Kindergarten latrines, the ratio of total students to student latrines is 200 to 1. However, because these two schools are in session during different times of the day, only half the total number of students are on campus at any given time. This results in a ratio of 100 students to each latrine. This ratio of students per latrine can also be examined for males and females. Based on the survey gender responses, more males are enrolled in school so the ratio for boys, when assessed for a single school session, is 112 students to one latrine. These values are based on the actual practice of latrine usage as observed by the author, in which neither school has truly taken ownership of a latrine block so

both of them are used by both school sessions. However, in theory, as was the aim of the latrine construction sponsor, each school is intended to have a single block which is owned, used and operated, and maintained by that individual school. When examined in this manner, the ratio of students to latrines increases significantly because there are fewer latrines available. For boys, the ratio becomes 224 males per latrine and for girls, the ratio is 164 students per latrine. Table 7 summarizes the ratios of students per latrines as described.

As discussed in Chapter 2, the recommendation for students per latrine on a school campus is 20-40 students, or when necessary 60 students (Leathes et al., 2011; Mooijman, 2012). Comparing the ratios from the TWI and J.C. Barlee schools in Liberia, the sanitation facilities on campus are insufficient for standards applicable to student populations.

However, as previously discussed, the estimated student populations may be higher than actual student presence on a typical school day because many students drop out of school and attendance is often sporadic. If it is assumed that the TWI survey participants represent a typical number of students on any given day, then the student population decreases to 453 students (grades seven to twelve). Ratios of students per latrine, assuming the student population is the same as the number of survey respondents, are provided in Table 8.

Table 8 Ratio of students per latrines based on TWI survey respondents.

Gender	Ratio of Students to Latrines (453 Students <sup>1</sup> ; Use of Two Latrine Blocks <sup>2</sup> )	Ratio of Students to Latrines (453 Students <sup>1</sup> ; Use of One Latrine Block <sup>3</sup> )
Male (56%)	65 boys per latrine	129 boys per latrine
Female (40%)	45 girls per latrine	91 girls per latrine
All Students (100%)	57 students per latrine	113 students per latrine

1 Based on TWI survey participants

2 As per common practice, assuming TWI students use both VIP latrine blocks

3 As per theory and intent of donors who sponsored latrine construction, assuming TWI owns, operates, and maintains one latrine block

Based on the TWI survey participant population (453 students), the ratio for girls falls into the recommended guideline of 60 students per latrine when necessary, with 45 girls per latrine, when it is assumed that TWI students use both of the latrine blocks. However, the 65 boys per latrine ratio is still above the recommended DFID ratio of 60 students per latrine. When investigated as designed, with the intention of TWI owning and using only one of the latrine blocks, the ratio again increases above the recommended values.

A urinal was built to encourage sanitation facility use on campus. Based on literature, the presence of a urinal will impact the recommend guideline ratios for students per latrine. UNICEF states that for each toilet and urinal, 50 males is an acceptable number. Even with the addition of the new urinal facility, TWI and J.C. Barlee schools still have an inadequate number of sanitation facilities. Four twelfth grade students even noted on their surveys that the school latrines are bad because they are “not plenty according to our population.”

#### **4.1.5 Siting and Location of Latrines**

The proper location and siting of school latrine facilities plays a key role in the effectiveness of school sanitation. It is important that latrines are constructed in a secure area and near enough to the school for convenience and safety of students, but still far enough to provide sufficient privacy and avoid odor nuisances in classrooms and offices. By examining satellite images, it appears that the TWI/J.C. Barlee latrines are located approximately 2.5 – 5 meters away from the back of the classroom building and 20 meters away from the campus’s water pump. According to international recommendations, school latrines should be 10 m downwind of buildings and 30 m downhill from a well or water source. Based on these guidelines, the TWI latrines are located too close to the school buildings and water pump. In fact, in the open-ended survey questions, 76 respondents mentioned the foul smell of the latrines as a negative and of



those, ten specifically stated that they could smell the latrines while sitting in the classrooms. Additionally, against international recommendations, the TWI school latrines are situated next to the campus's solid waste garbage dump. The TWI latrines are located within the campus fence, but the main gate of the fence was broken and unsecured at the time of the observations and surveys. The latrines from this research are not located in an ideal location. According to latrine guidelines, they are too close to the school building and to the water pump. Because of their location, they do not allow adequate privacy and they can disturb classes due to foul smells.

#### 4.2 Socio-demographic Data

A total of 709 surveys were administered at TWI Junior and Senior High School and J.C. Barlee Elementary. Of the total respondents, 57% were male, 40% were female, and 3% did not specify a gender. A chart of the distribution of respondents by grade/school position is provided in Figure 7.

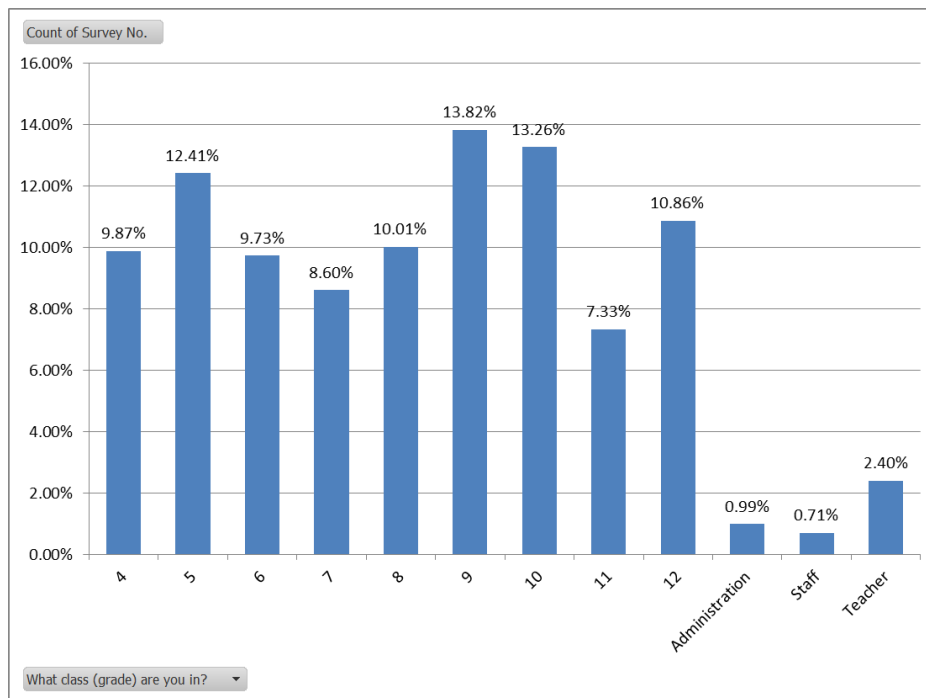


Figure 7 Distribution of survey respondents by grade level/position at school (n = 709).

Of the 709 survey respondents, 29 were administrators/faculty/staff and 680 were students ranging from fourth grade to twelfth grade. In percentages, administration/faculty/staff represent 4% of the total respondents, J.C. Barlee Elementary students are 32%, and the remaining 64% of respondents are TWI students (33% from Junior High, grades seven to nine; 31% from Senior High, grades ten to twelve). It is important to recall that not all of the elementary students were included in the study; only grades four to six were surveyed due to time and resource constraints.

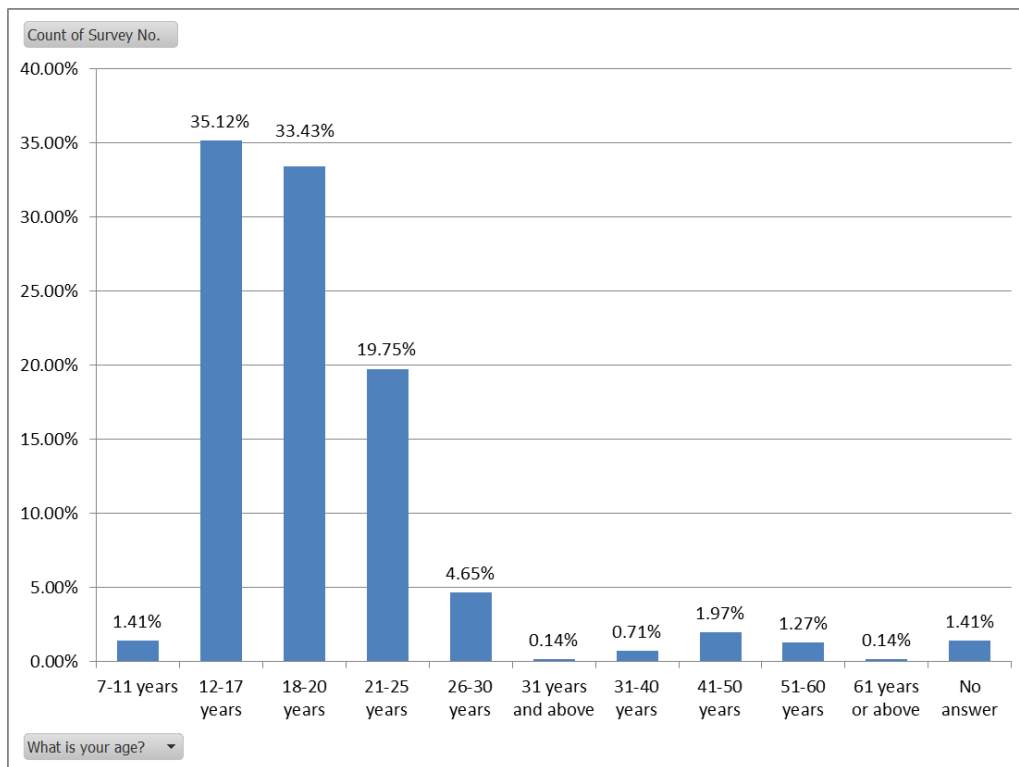


Figure 8 Distribution of survey respondents by age (n = 709).

Figure 8 provides the percentage breakdown of respondents by age. Again, the total number of respondents or sample size is 709. The significant majority, 89%, of survey participants were between the ages of 12 to 25 years as categorized into three age ranges in this

survey: 12-17 years, 18-20 years, and 21-25 years. Although the students surveyed are in primary or secondary school, the ages of the students are not typical due to limited financial resources of pupils and their families and the recent history of the country which disrupted all aspects of life, including education. Ages for TWI senior high students are displayed in Figure 9. In the senior high (grades ten to twelve), only 5% of the students are ages 12-17, the typical senior high age range in the United States. Instead, 42% and 40% of the students are ages 18-20 and 21-25 years, respectively.

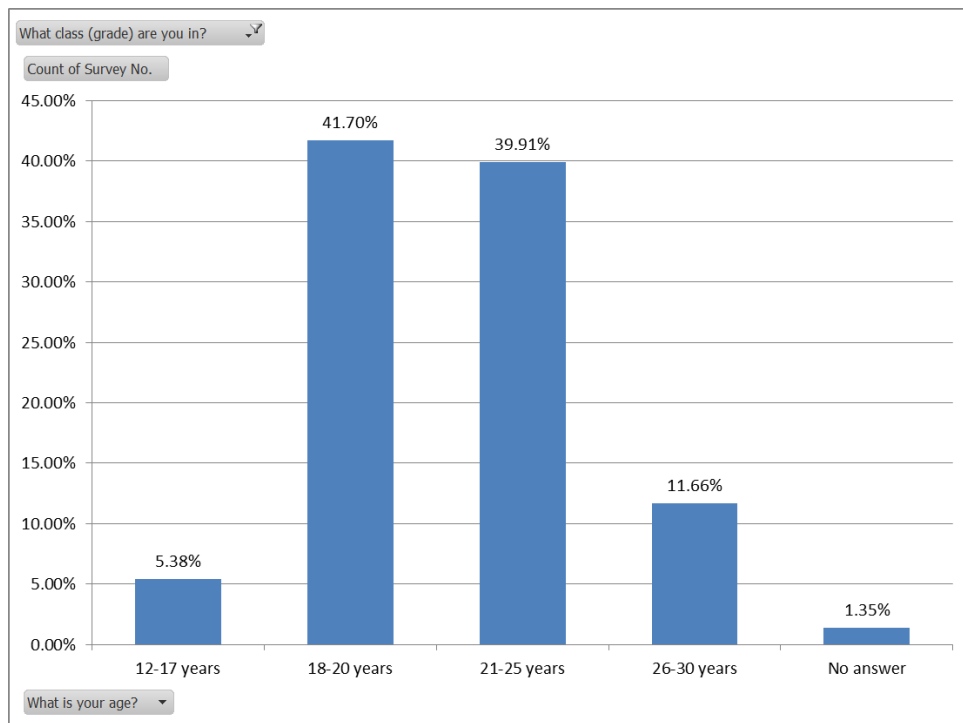


Figure 9 Age distribution of TWI Senior High student survey respondents (n = 223).

However, when comparing user responses, it is logical to evaluate the answers by grade, rather than by age. This is due to the fact that the surveys were administered individually to one class or grade level at a time. Also, the majority of students in a single class fall under the same age range, but the various age ranges extend over several classes. By examining responses in

this manner, the author is also able to discern which populations she taught or worked with on a daily basis. The largest differences were responses between classes. For example, when the data was evaluated by gender, there were no significant differences between male and female responses.

### **4.3 User Preferences and Motivations**

As described in Chapter 3, surveys were administered to students and faculty from TWI and J.C. Barlee schools. The surveys focused on three specific aspects of latrines that impact user adoption: cleanliness, safety, and comfort. These factors were selected based on a preliminary literature review and previous studies. The survey also allowed users to provide comments and feedback through open-ended questions and asked users about their latrine use frequency. Complete results from the surveys are provided in Appendix G.

The survey investigated frequency of use for the school latrines. For usage, 77% of total respondents stated that they do use the communal latrines, while 22% do not use the latrines. For the individuals that use the latrines, the survey also questioned how often they use the facilities and various time ranges were provided for selection. Figures 10 and 11 provide details from the survey responses regarding latrine use and latrine use frequency. It should be noted that although 77% of participants said they use the latrines, 85% of the total respondents still answered the follow-up question about frequency, so some of the respondents that originally selected no still answered the second question. Of the 604 respondents that answered the question about school latrine use frequency, 88% use the latrines daily, one time a week, or 2-3 times per week. This usage is high for communal latrines.

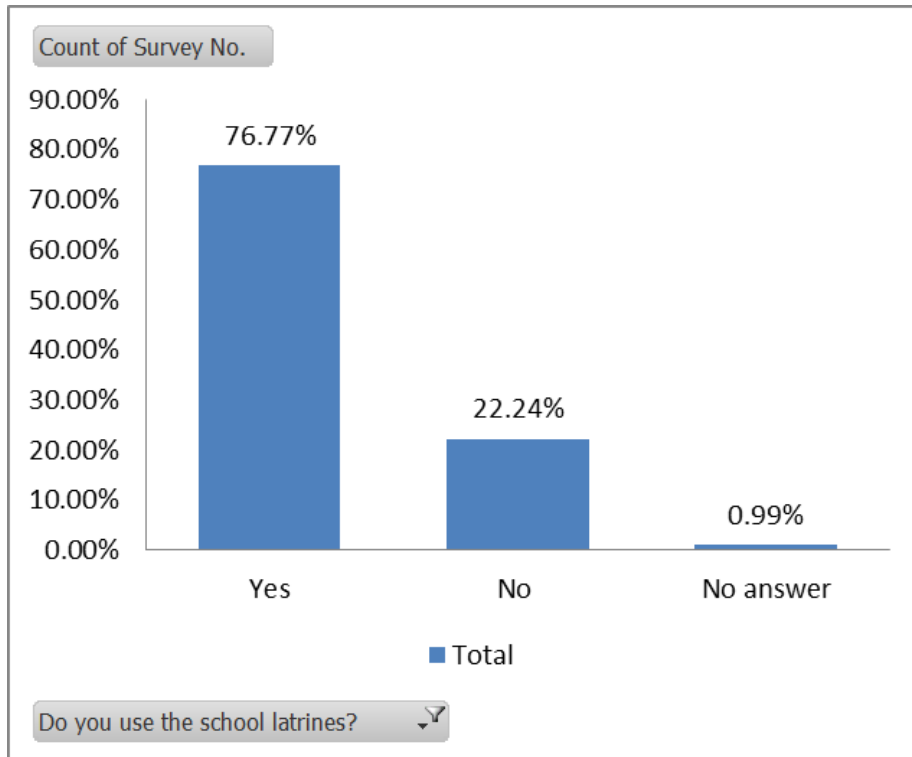


Figure 10 Survey responses to “Do you use the school latrines?” (n = 709).

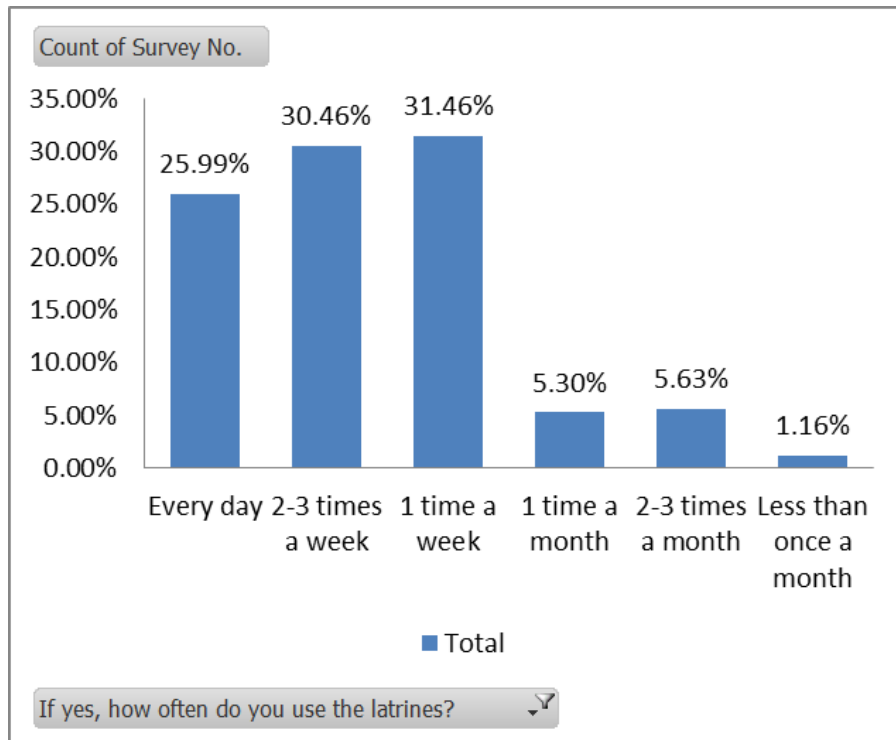


Figure 11 Survey responses to "If yes, how often do you use the school latrines?" (n = 604).

### 4.3.1 Latrine Cleanliness

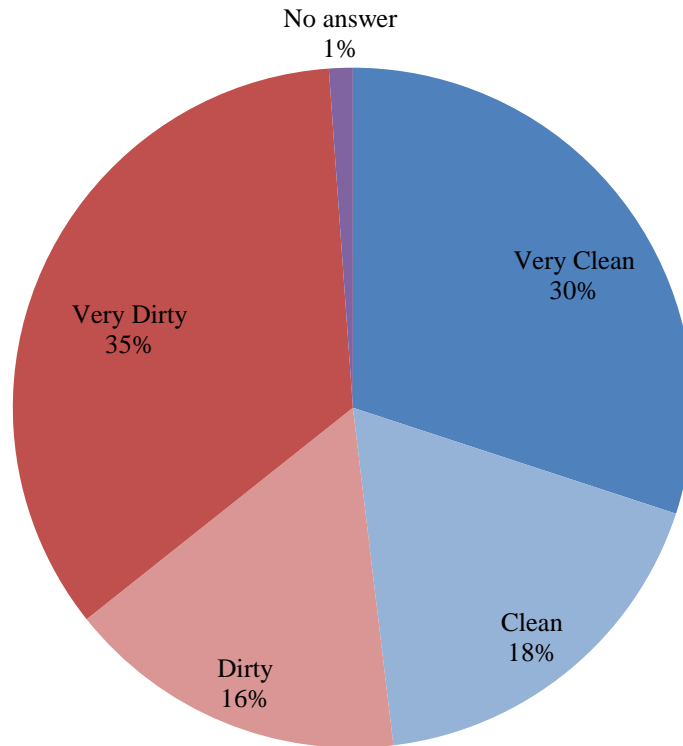


Figure 12 Survey responses to "How clean are the school latrines?" (n = 709).

Figure 12 depicts the participant responses when asked “How clean are the school latrines?”; 35% of the 709 respondents selected very dirty. This was followed by 30% very clean responses and then 18% clean and 16% dirty. In previous studies dealing with sanitation technologies, latrines generally had lower ratings for cleanliness than other improved sanitation technologies, such as sewer connections and flush water closets. Additionally, communal latrine users typically concluded that cleanliness was a significant factor in being dissatisfied with their sanitation facilities (Seymour, 2013).

The responses for very clean and clean were investigated more to understand user perceptions. Upon review it was found that certain groups may have made selections, not based

on the reality of the situation, but on their perceptions of what they wanted or what they believed the author wanted to hear. Responses from various groups are displayed in Figures 13, 14, and 15.

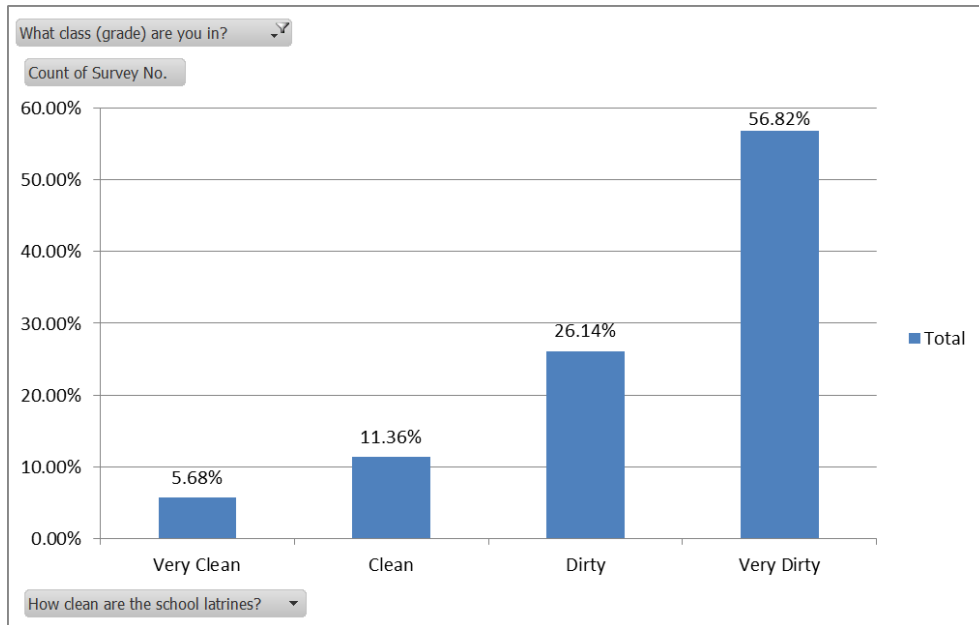


Figure 13 Grade 5 survey responses for "How clean are the school latrines?" (n = 88).

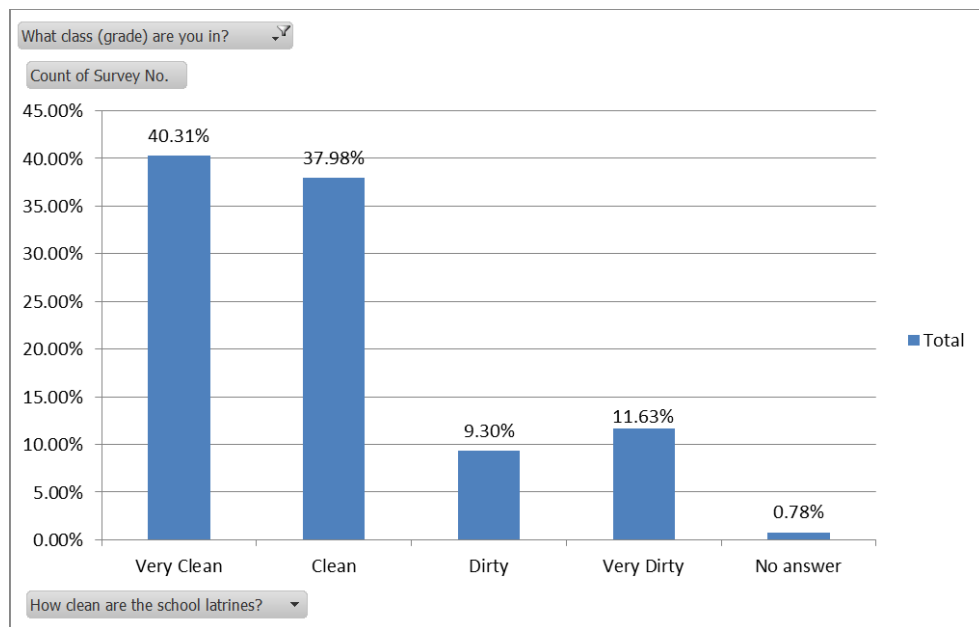


Figure 14 Grades 11 and 12 survey responses for "How clean are the school latrines?" (n = 129).

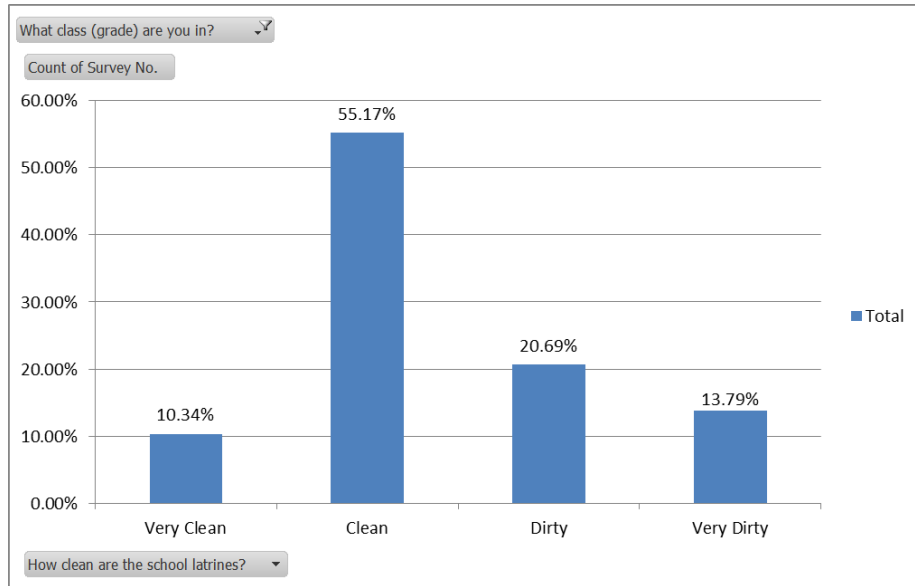


Figure 15 Administration, faculty, and staff survey responses to "How clean are the school latrines?" (n = 29).

Figure 13 displays responses from the Grade 5 J.C. Barlee elementary class. The distribution is the curve that was expected or hypothesized by author. Note that the author did not know the fifth grade students at the time the survey was administered and the students were not familiar with her because she only worked on the campus in the afternoon, during the secondary school session. In contrast, Figure 14 shows the responses from TWI's Grades 11 and 12. The majority of the respondents selected positive results for latrine cleanliness. The author, who was serving as the physics teacher to Grades 11 and 12, credits this to her students wanting to respond positively either because they believed that is what their teacher wanted to hear or because they wanted to reflect the impact that their teacher had on the student health club and the sanitation facilities (even though the latrine operation and maintenance plan had not yet been placed into effect). A similar trend with positive responses is observed with the administration, faculty, and staff answers in Figure 15. Because the author had friendly work relationships with most faculty, their responses may also be impacted for the previous reasons mentioned for



Grades 11 and 12. Additionally, the author believes that administration was attempting to salvage the reputation of the school and themselves. It is known that the school is responsible to operate and maintain the sanitation facilities so it appears beneficial for them to answer positively and claim that the facilities are clean.

Regardless of the reasoning behind the perceptions, a well-defined consensus on latrine cleanliness was not established through this user perceptions survey. Although 51% of the total respondents judged the communal latrines to be dirty or very dirty, 48% stated they latrines were clean or very clean.

#### 4.3.2 Latrine Safety

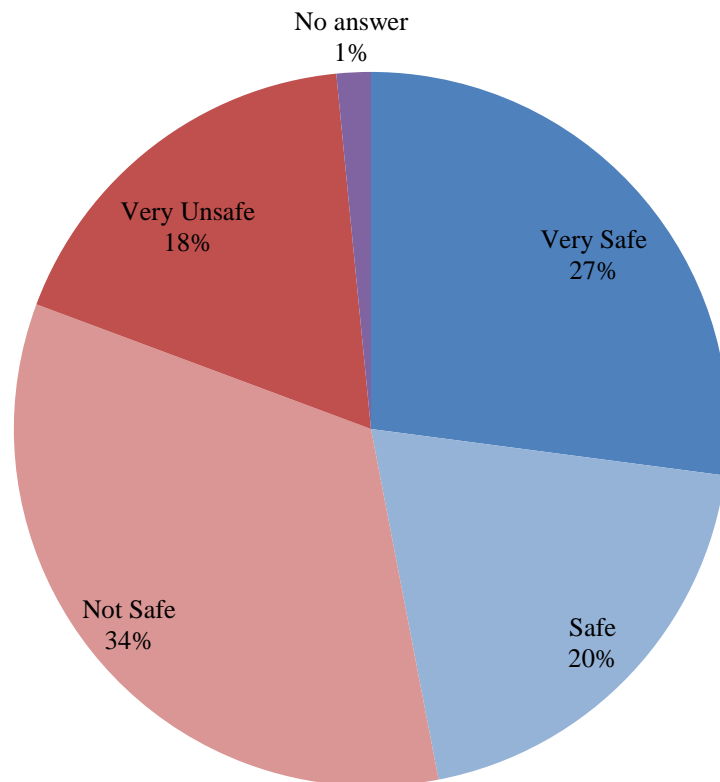


Figure 16 Survey responses to “How safe are the school latrines?” (n = 709).

The survey also asked users about latrine safety. The definition of safe was not defined for the survey participant so respondents were able to interpret as they wished. Through open-ended question responses and questions and comments during the survey administering, the author believes that the word safe was interpreted in two ways, either in terms of health safety or in terms of safety and security. As seen in Figure 16, 34% of respondents perceived the school latrines as not safe, followed by 27% viewing them as very safe.

Again, various classes responded drastically differently to this question. Figures 17 and 18 display responses from grades 5 and grades 11 and 12, respectively.

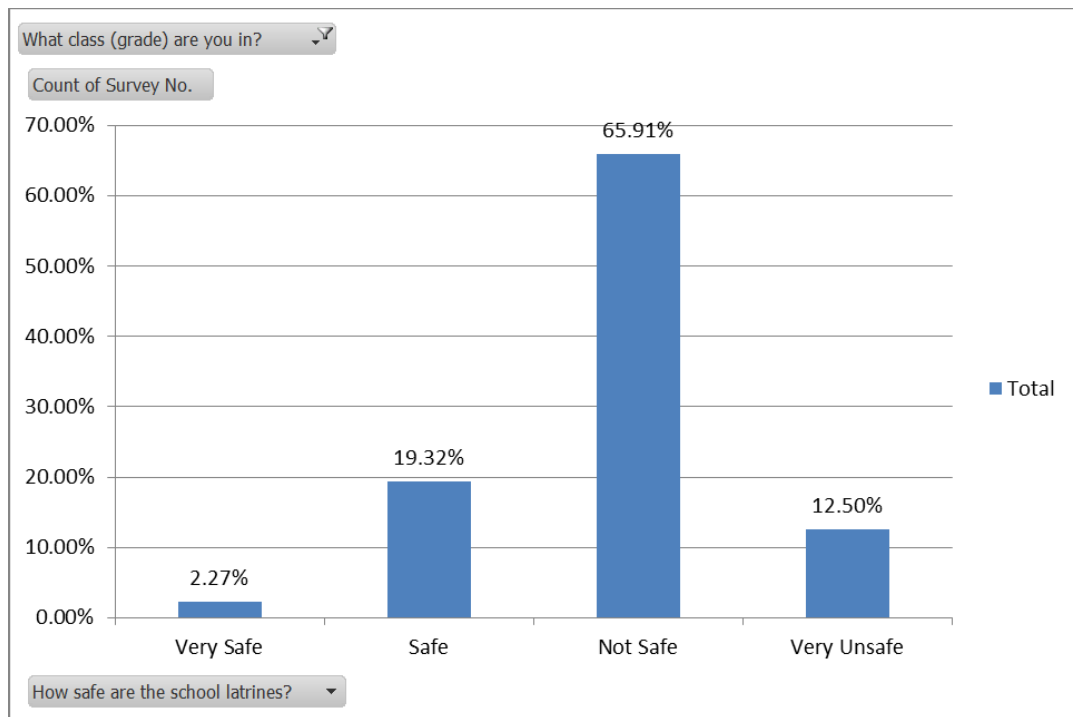


Figure 17 Grade 5 survey responses to "How safe are the school latrines?" (n = 88).

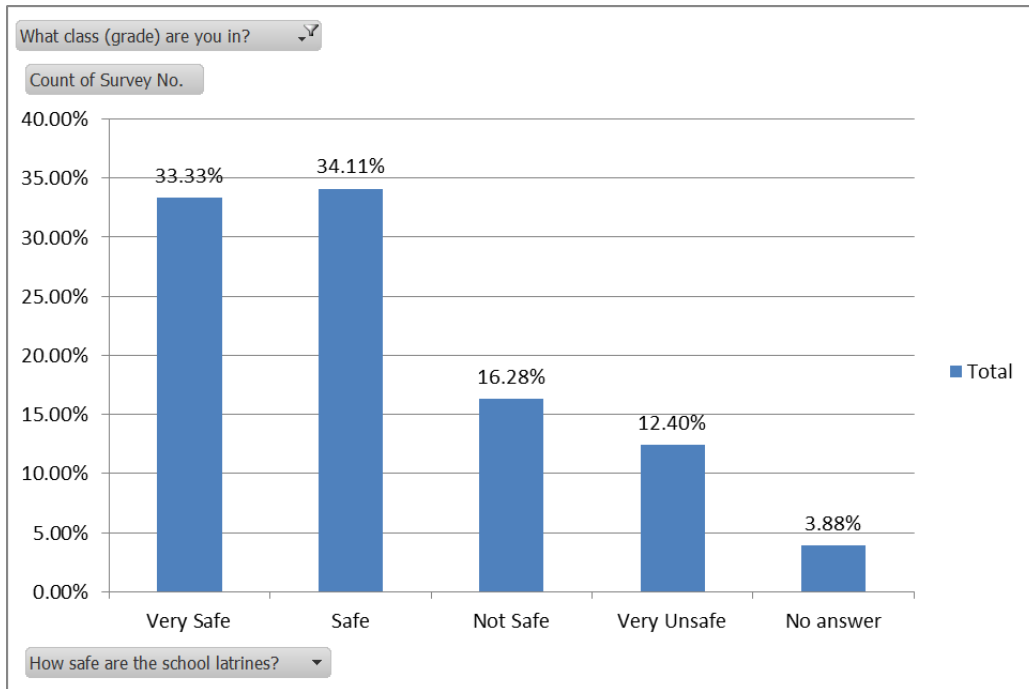


Figure 18 Grades 11 and 12 survey responses to “How safe are the school latrines?” (n = 129).

The author credits the same reasoning as previously discussed for the variances in responses between classes, although the differences in age may also be a contributing factor. As experienced by the author and other Peace Corps Volunteers throughout the country, an additional factor to mention is the cultural acceptance of spying or cheating in the Liberian school system. Often, one student answers test questions (or in this case survey questions) and then the surrounding students simply copy from the original student’s sheet. It is easier to select these copies based on open-ended questions, but it is difficult to determine which student had the original answers. Students also copy from several different peers so responses may not be exactly the same.

The author was uncertain how students and staff would respond to this safety question. Unlike the cleanliness question, where she fully expected dirty and very dirty responses if the respondents were being honest, the expectations for safety responses were not well established.

Because the latrines are located in close proximity to the school buildings, within the campus fence, and visible from multiple vantages, the facilities could be considered safe when judged in terms of security. However, because of the lack of maintenance and the filth in and surrounding the latrines, the author would understand if the latrines were deemed unsafe for health reasons or simply because one would not want to say anything positive about the latrines. It appears that no clear consensus was identified from the responses of the this school latrine safety question because 52% of respondents claimed the latrines were very safe or safe, while 47% perceived the latrines to be unsafe or very unsafe.

### 4.3.3 Latrine Comfort

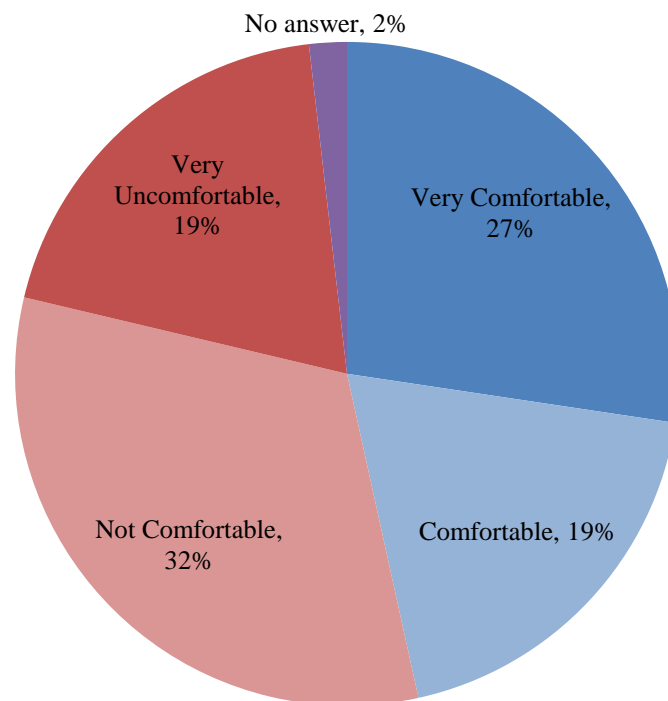


Figure 19 Survey responses to "How comfortable are the school latrines?" (n = 709).

The third aspect of the communal school latrines that was investigated via the user surveys was comfort. Once more, the feature was not defined for the respondent, but being comfortable or “feeling free” is a concept understood by Liberians. Figure 19 depicts the responses from all survey participants for “How comfortable are the school latrines?”

Of the 709 survey participants, 51% believed that the latrines were not comfortable or very uncomfortable, while 46% selected comfortable or very comfortable. Once more, distinct classes answered the question in differently; Figures 20-22 display responses from different school populations.

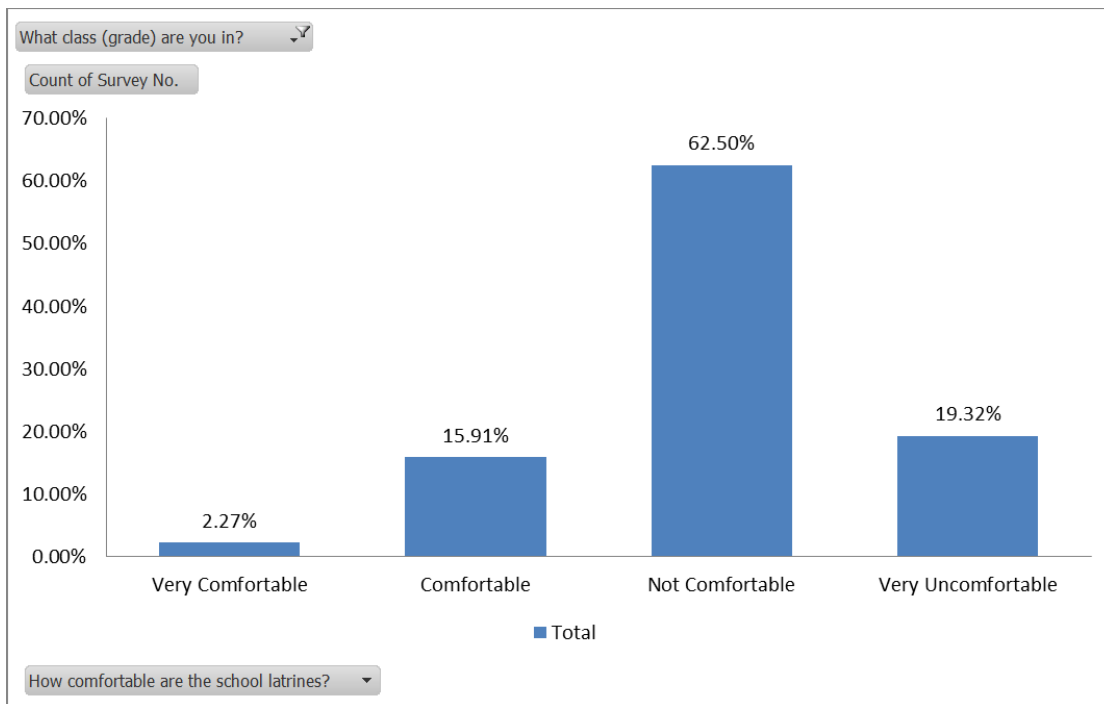


Figure 20 Grade 5 surveys responses to "How comfortable are the school latrines?" (n = 88).

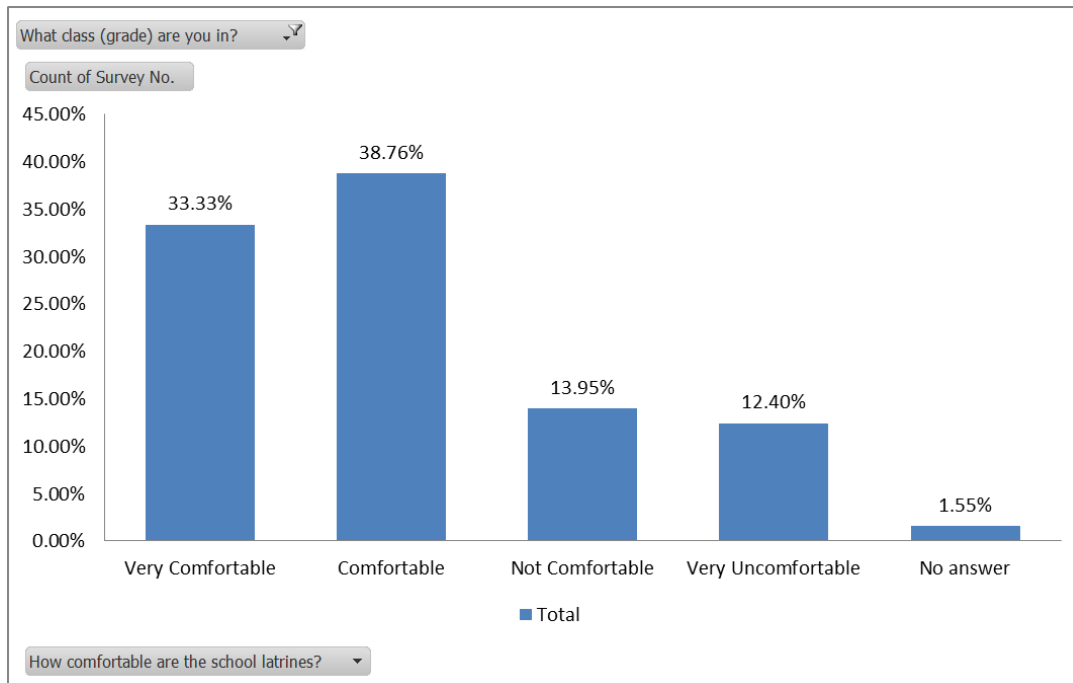


Figure 21 Grades 11 and 12 survey responses to “How comfortable are the school latrines?” (n = 129).

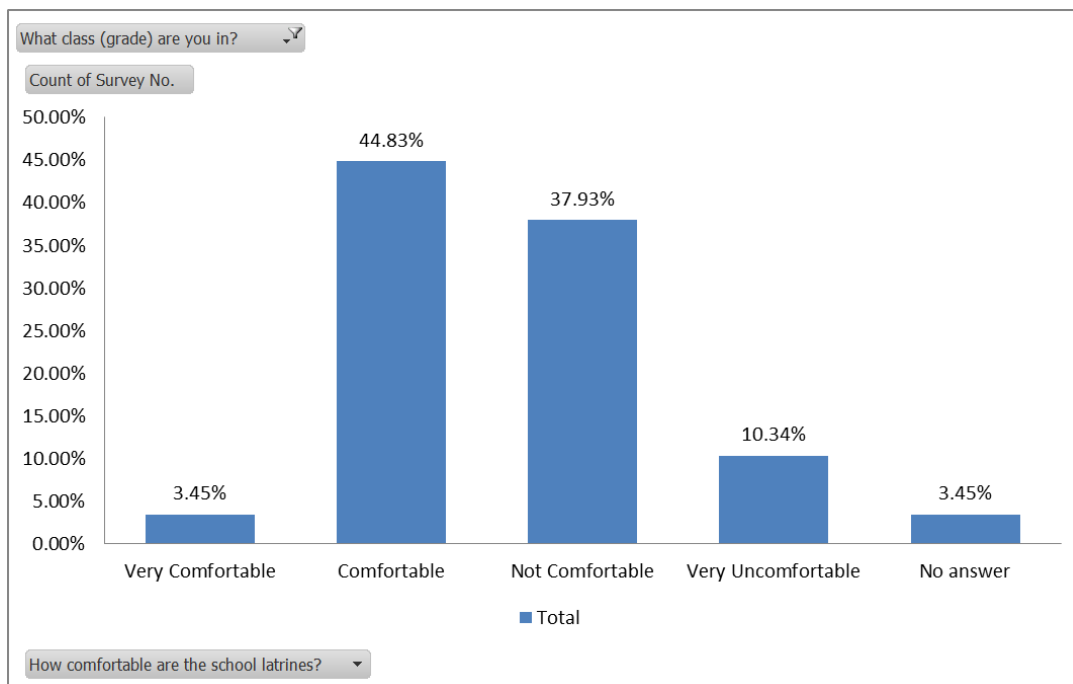


Figure 22 Administration, faculty, and staff responses to “How comfortable are the school latrines?” (n = 29).

Grade 5 overwhelmingly, with 63% of the 88 responses, deemed that the school latrines were not comfortable. In contrast, 72% of the grade 11 and 12 responses (n = 129) state that the latrines are very comfortable or comfortable. Interestingly however, administration, faculty, and staff responses (n = 29) were split between positive reviews for comfort (48% of answers for very comfortable or comfortable) and negative reviews (48% for not comfortable or very uncomfortable).

#### **4.3.4 Open-Ended Survey Questions**

In addition to the multiple choice questions which allowed participants to select the cleanliness, safety, and comfort levels of the school latrines based on provided options, the survey included open-end queries. These questions urged users to “Please explain what is beneficial or good about the school latrines” and “Please describe what is negative or bad about the school latrines.” As previously mentioned, many of the responses were the same because of the practice of spying and helping friends and some respondents did not write anything for the open-ended questions. Of the total 709 surveys, 40 respondents did not write anything for the positive remarks on the latrines and 68 did not include any negative comments. It should be noted however, that some students mixed up the questions and wrote their comments about the bad aspects of the latrines under the question for good features. Many responses also just repeat the themes of cleanliness, safety, and comfort that were addressed in other survey questions.

In the responses to these open-ended questions, several different themes arose. Upon review of the survey data, the themes were identified by the author based on frequency of the word or set of words falling under the theme. The first theme recognized was the smell or odor of the latrines, which included keywords smell, smelling, odor, and scent. As mentioned in the latrine design discussion, 76 of 709 users acknowledged the foul smell of the latrines as a

negative characteristic. Based on the author's observations of the facilities, the latrines often had an unpleasant odor. Most of the responses simply have some version of "the latrines smell" or "the latrines smell bad" as the response. However, one unique comment was provided by a grade 9 female student, age 21-25. Her comment stated that "When the sun is very hot or when the wind blow(s) the latrines smelled very bad." This observation is distinctive because she provides reason for her opinion or answer, something not commonly observed by the author during her two years teaching in Liberia. It is also interesting because her comment connects the importance of latrine design to user preferences. As discussed in the literature review, the vent pipe aims to provide air exchanges from the pit to control odor; this is achieved by wind blowing across the vent outlet and by temperature variations between the pit and the ambient atmosphere. The student's comment directly links these design criteria to the resulting smells of the latrines and insinuates that the latrines are not functioning properly.

A second topic that relates to latrine design and construction that occurs frequently in the open-ended responses is the materials used to build the latrines and the latrine components. For analysis, the following keywords were used to distinguish these responses: door, lock, window, hole, zinc, paint, and construction. Forty-four (44) of 709 respondents mentioned at least one of these keywords in their open-ended responses, with door appearing most often. The keyword door is used 31 times, of which 24 replies are in describing negative features of the school latrines. Often the comment is in relation to the door and lock, such as "the school latrines are bad because no lock on the door." A few of the replies also discuss that the door is not comfortable. In this terminology, comfortable is not defined, but it may be in relation to the lack of locks or perhaps to the fact that the door has no air gaps and the superstructure has no windows, so when the door is closed little light is able to enter the structure. The author inferred



this concept of absence of light because some responses also mention that the structures have no windows. For operation and efficiency of the VIP latrine technology, no light in the structure is ideal, but for user preferences, light is preferred when using a latrine. Hole (drop hole) was also used to describe negative aspects of the communal latrines. In terms of construction, hole is only mentioned four times and the comments state that hole is bad and there should be better seating for users.

Although the doors, locks, and drop holes were typically viewed as negative facets of the school latrines, some respondents commented on positive construction materials. Paint was used twice and zinc (the roofing material) was used four times to describe something good about the latrines. However, the zinc was also mentioned in other responses as being bad because it was old. One student commented that the overall construction of the latrines was good.

Another theme occurring frequently in the responses was the condition of the inside of the stalls or, more bluntly stated, the presence of feces. Although hole was mentioned several times in regards to construction, it was also referred to in relation to this theme, in the sense that people do not use the drop hole properly. Keywords used to identify this theme were pupu/poopoo, toilet, floor, and around. Of the total surveys, 68 users mentioned the presence of pupu on the latrine floor or around the facility. Some of these responses also state that there was feces on the walls, as if someone has used the wall to wipe themselves clean. All discussions of this theme were focused on the negative characteristics of the communal school latrines.

The use of the school sanitation facilities by community members and people unaffiliated with the TWI or J.C. Barlee schools was a theme in the open-ended survey responses. During the sanitation workshop with the student health club, while students and faculty were developing the school's latrine operation and maintenance plan, they agreed that nothing should be implemented

until the campus fence was complete and the facilities were secure. This was due to the fact that they did not want community members coming from outside to dirty the latrines or spoil their maintenance work. Of the 709 surveys, 63 participants revealed that a negative feature of the school latrines was that anyone from the community could access and use the facilities, although they were intended only for the school population. One tenth grade male, between the age of 18-20, notes that the school latrines are bad because “When the school latrine is not restricted, properly clean, any other person from outside of school can use it, and it is very bad.” He continues by recommending that the latrines be placed in a fence, locked at all times, and restricted by the administration. His recommendations mirror the operation and maintenance plan that was developed, but yet to be implemented.

A final theme from the user surveys was the health aspect of the latrines. Seventy-seven (77) of the 709 survey respondents mentioned disease, sick/sickness, and/or hand washing. Unlike the presence of feces on the floor or the community usage of latrines, which were both referenced as completely negative characteristics, the health impacts were sometimes regarded as negative and sometimes positive. Twenty participants understood the potential beneficial impacts of proper sanitation because they mentioned that it is good to wash hands after using the latrines and that latrine adoption can decrease sickness and disease. These comments seemed to be in relation to general sanitation and not specific to the school latrines. However, 57 of the 77 health responses state that the school latrines are bad because they are dirty, users can get sick, and that there is no water and/or soap available to wash hands after using. A male ninth grade (18-20 years old) student summarizes these perceptions of positive and negative health aspects by stating “The beneficial or good about the school latrines is when the school latrine is clean, we

can be healthy, but when it is dirty we contact (contract) disease from the latrines. The school latrines is very dirty to the extend (extent) that we cannot be able to go in it.”

Table 9 Summary of open-ended survey question responses (n = 709).

Theme	Keywords	Comments from study author	Number of user responses that use a key word in their open-ended question response
Smell	Smell; smelling; odor; scent	The smells of the latrines were referenced in terms of the negative aspects of the latrines.	76
Latrine construction	Door; lock; hole; zinc; paint; construction	Doors, locks, and holes (drop holes) were generally referenced in terms of negative aspects, while the zinc and paint were positive features.	44
Presence of feces	Pupu/poopoo; toilet; floor; around; hole	The presence of feces or pupu on the latrine floor and around the latrines was mentioned as a negative feature of the school facilities.	68
Use by community	Community; outside	The practice of community members and individuals from outside the school population using the school VIP latrines was deemed a negative characteristic.	63
Health aspects	Sick/sickness; disease; hand	Adequate sanitation has potential to be beneficial, but because the school latrines are dirty and water and soap are not available, users can get sick.	77

#### 4.3.5 Home Sanitation Technologies of School Population

To provide additional background on the school population and the household sanitation technologies in Zwedru, the school sanitation user preferences survey inquired “Where do you go to the bathroom at your house?” Options, including outside (bush), private pit latrine, private VIP latrines, private pour-flush commode, shared pit latrine, shared VIP latrine, and shared pour-

flush commode, were available for selection by the survey participant. The survey provided a definition of private (one household) versus shared (more than one household), but did not explain the variations between the sanitation technologies. Figure 23 displays the distribution of user responses.

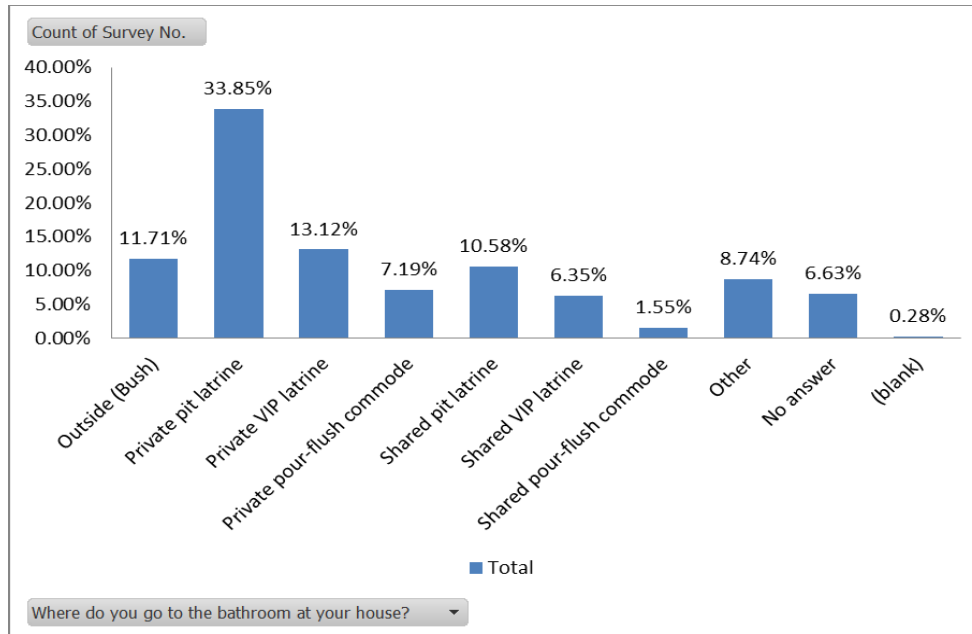


Figure 23 Survey responses to "Where do you go to the bathroom at your house?" (n = 709).

As displayed in Figure 23, 34% of the respondents noted that they use private pit latrines at their houses, followed by 13% with private VIP latrines and 12% practicing open defecation (outside/bush). The 9% displayed as other had selected more than one technology. Upon investigation, no clear connection between household sanitation facility and responses to the communal school latrine questions were found. However, it should be noted that 6% of respondents said that their home sanitation facilities are the same type (shared VIP latrines) as the school technology. Following the JMP sanitation ladder, any of the private facilities would be considered more advanced than the shared VIP latrines. Of the survey participants, 54% stated

that they use a private sanitation technology at their house, while 6% use the same type of shared technology and 24% use other shared facilities or practice open defecation. Although over half of the respondents have more improved sanitation facilities available for their use, according to the survey results 77% of total respondents declared that they use the school latrines. This shows that the type of household sanitation may not impact the usage of communal school latrines.

#### **4.3.6 Survey Limitations**

There were several challenges and limitations relating to the user preferences survey. As previously discussed, the author was a teacher at TWI during the study. She served as the physics teacher for the eleventh and twelfth grade classes and was well known on the high school campus. The surveys were administered in May and June 2014 and, at this point in time, the author had been an active teacher at the school for two full academic years. Because of this relationship, many of the students and faculty may have believed that the author had a personal connection to the outcome of the survey and thus believed that she wanted positive results. This relationship may have resulted in biased participants that may not have been answering the questions honestly. If time and resources had allowed, the author could have conducted comparative surveys at other schools in Zwedru where she had not been involved in daily teaching and administration activities. In Zwedru alone, there are two additional government secondary schools and four private secondary schools, all with sanitation facilities, predominantly VIP latrines. By performing and analyzing further surveys from different school participants, the author could establish how her relationship to the TWI users impacted the survey findings.

Another limitation to the survey was the open-ended questions. Liberia's education system is severely deficient and many students are unable to read and write, yet they continue to

pass through grades. There were many spelling errors and poor handwriting in the open-ended portions of the surveys and the author did her best to distinguish the concepts that the respondent was attempting to express. For example, many students wrote that the latrines small bad, which could mean that the latrine stalls are too small or the latrines stalls smell bad. In future surveys, the author recommends that key themes or words, such as smell, pupu on floor, community members using facilities, construction materials, hand washing, disease, etc., be provided for the users to select from when answering questions like what is good or bad about the latrines. This would eliminate the open-ended questions and the necessity for the author to interpret the writing of the respondents. However, this type of survey may also lead the users, rather than allowing them to think of their opinions independently.

The author also noticed that sometimes the open-ended questions did not match the scale selections for the cleanliness, safety, and comfort questions. For example, users would sometimes select clean as the response to “How clean are the school latrines?”, but would then respond in the open-ended “What is bad about the latrines?” question that the latrines were very dirty. These discrepancies may be caused by users not fully understanding the questions, participants copying from their peers, or participants striving to answer the question correctly, although it is a survey with no correct answers, only user perceptions and opinions.

Another limitation was the terminology used in the survey. Although the survey mentioned ventilated improved pit (VIP) latrines in the title, all the questions, except for the final question, asked about the school latrines. The final question was an open-ended question asking if the participant had any additional comments regarding the VIP latrines. As is common in the English language, Liberians understand VIP to be a very important person. Some users interpreted this question to mean the latrines for important people, rather than the type of latrine

technology, so they answered the question as if the school had separate facilities for important visitors, which it does not. This misunderstanding relates to the respondents' familiarity with sanitation technologies. There was also a question asking respondents what sanitation technology they use at their home, which also relies upon respondent knowledge of sanitation facilities.

It was the original intention of the author to give a preliminary survey, followed by a health and sanitation lesson for each grade level, taught by TWI health club students, coupled with improved operation and maintenance (O&M) of the school latrines, and finish with a second survey set. Unfortunately, the public health crisis disrupted all daily life in Liberia and forced the author to end her Peace Corps service abruptly without completing the health lessons, implementing the O&M plan, and conducting the second set of surveys. The understanding of sanitation facilities may have improved following the health lessons, which would have resulted in more appropriate responses for the questions that relied heavily on participant knowledge of such technologies.

Finally, the survey was limited in that it assumed that user preferences and latrine adoption were directly correlated. When creating the survey, the author assumed these two notions were closely interrelated and she did not specifically define the concepts. However, the survey results show that perhaps the student population may still use the facilities even though they are not satisfied with all aspects of the communal latrines. This conclusion is made based on the high user rates and the various user perceptions, a mix of positive and negative reviews, regarding latrine cleanliness, safety, and comfort. The fact that the majority of the school population uses the communal latrines, despite their personal preferences, may imply that convenience is a significant factor which impacts school latrine adoption.

#### 4.4 Framework for Latrine Adoption

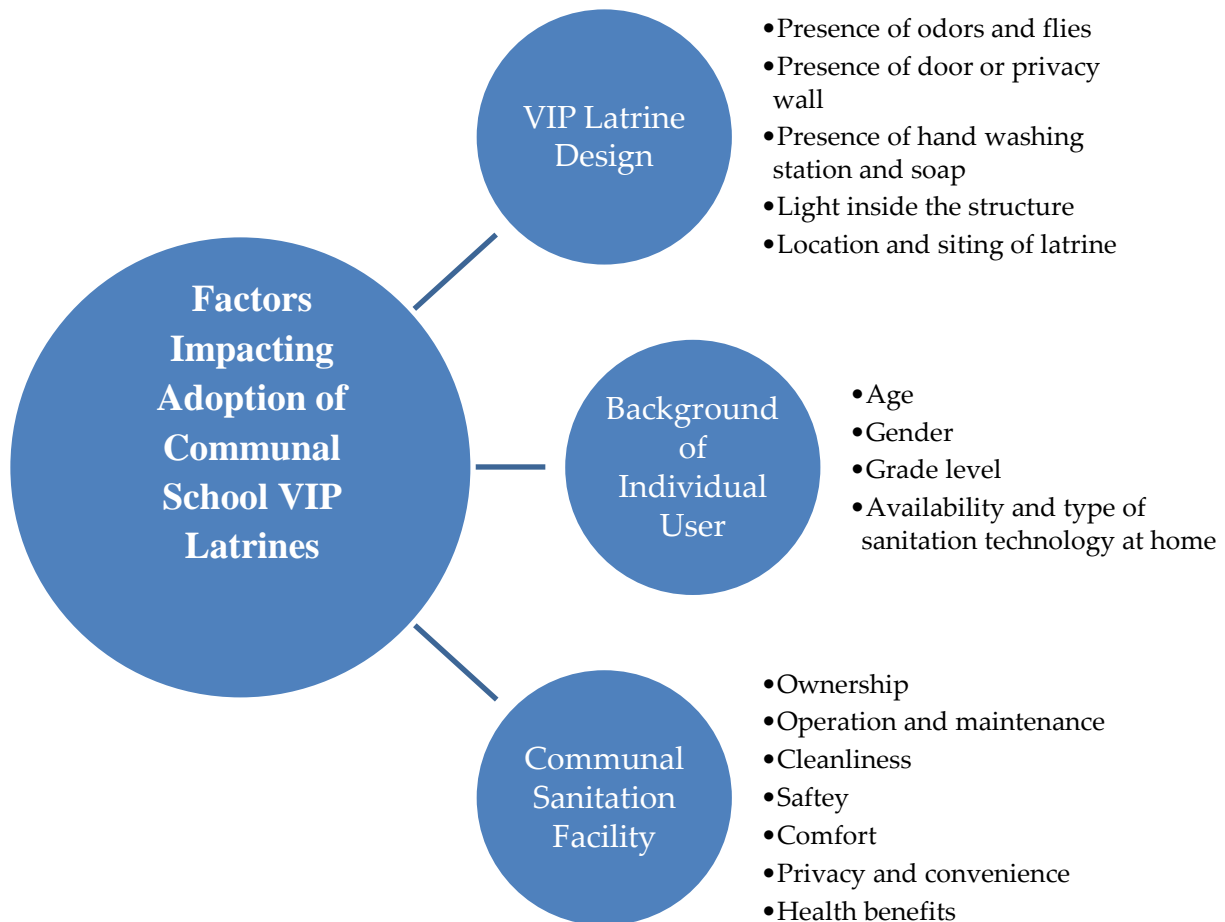


Figure 24 Framework of factors impacting adoption of communal school VIP latrines.

The author originally hypothesized that factors impacting communal school latrine usage would be divided into three categories: VIP latrine design factors, background of individual user, and communal sanitation facility factors. VIP latrine design factors include construction aspects of the facility, effectiveness of the design, particularly in terms of odor control, and location of the communal latrines. Age, gender, grade level, and household sanitation facilities are characteristics of the individual users that may impact their decision to adopt the school latrines. Communal sanitation facility factors that were hypothesized to impact latrine usage on campus include the health benefits of improved sanitation along with the ownership, operation, and



maintenance of the facility; more specifically, the cleanliness, safety, and comfort of the VIP latrines. The factors that influence communal school VIP latrine adoption, as hypothesized by the author based on a preliminary literature review, are summarized in the framework diagram in Figure 24.

Through research, it was found that VIP latrine design components appear to influence user preferences at the study site. This is apparent because survey responses discussed construction factors, such as presence of door and locks, presence of hand washing stations, and odor of the school VIP latrines. Numerous respondents, as discussed in the previous section, mentioned the positive and negative qualities of the communal school latrines in relation to VIP latrine design components. The amount of light inside the superstructure, however, was not commented on directly by any respondents, although eight participants mention the lack of window as a negative feature of the latrines.

Factors relating to the background of the individual user, such as age, gender, and available household sanitation facilities, seemed to play a lesser role in responses regarding the communal school latrines. The variances between male and female responses and the responses of different age groups were not significant. The characteristic of the individual user that influenced the survey responses was the grade level of the individual. The author contributes this to the culturally accepted habit of spying and the method in which the study was given by classroom grade levels. The sanitation facilities at the household also appeared not to have an impact on the adoption of the school latrines. Individuals with private household sanitation, which is considered more improved, still used the school latrines. This leads the author to contemplate convenience as a major factor impacting adoption of the TWI communal school VIP latrines.

Finally, it was established that the communal sanitation facility aspects, such as cleanliness, safety, comfort, ownership, operation and maintenance, and health benefits of the VIP latrines impact user preferences. This is evident because many users repeated their opinions of how clean, safe, and/or comfortable the latrines were in open-ended questions of the surveys even though they had already answered the previous multiple choice questions regarding the same topics. The participant comments from the open-ended questions also reveal their perceptions for latrine operation and maintenance and their understanding of the health benefits. The theme of health in the open-ended responses confirms that participants appreciate the health benefits of utilizing appropriate sanitation technologies, but many comments focused on the adverse effects due to the dirty condition of the communal school facilities. The negative themes of feces around the latrines and community members using the school sanitation facilities relate to the lack of latrine operation and maintenance by the school administration. As discussed in earlier chapters, this absence of operation and maintenance is likely due to the circumstance in which the school latrines were designed and constructed without input from the administration or students. Because of this exclusion, TWI and J.C. Barlee schools do not feel ownership of the facilities, as they were never included in initial planning or implementation and never received training on proper VIP latrine operation and maintenance.

When the author established her thesis objectives, she assumed that user preferences and latrine adoption were essentially comparable and interchangeable. Logically, it would make sense for users to only use a sanitation facility that they preferred and enjoyed. After analysis of the survey results however, this notion has been found to be erroneous. The user rates of the school latrines as reported are significant, with 85% of the population surveyed claiming that they use the latrines at least once a week, if not 2-3 times a week or daily. However, simply

because the facilities have been adopted, does not mean that users are satisfied or their preferences are being fulfilled. For example, in the fifth grade class, 52 students claimed that they used the school latrines, but 75% of these 52 students perceived the latrines as being dirty or very dirty. Figure 25 shows the distribution of responses to “How clean are the school latrines?” for the grade five students that use the school facilities.

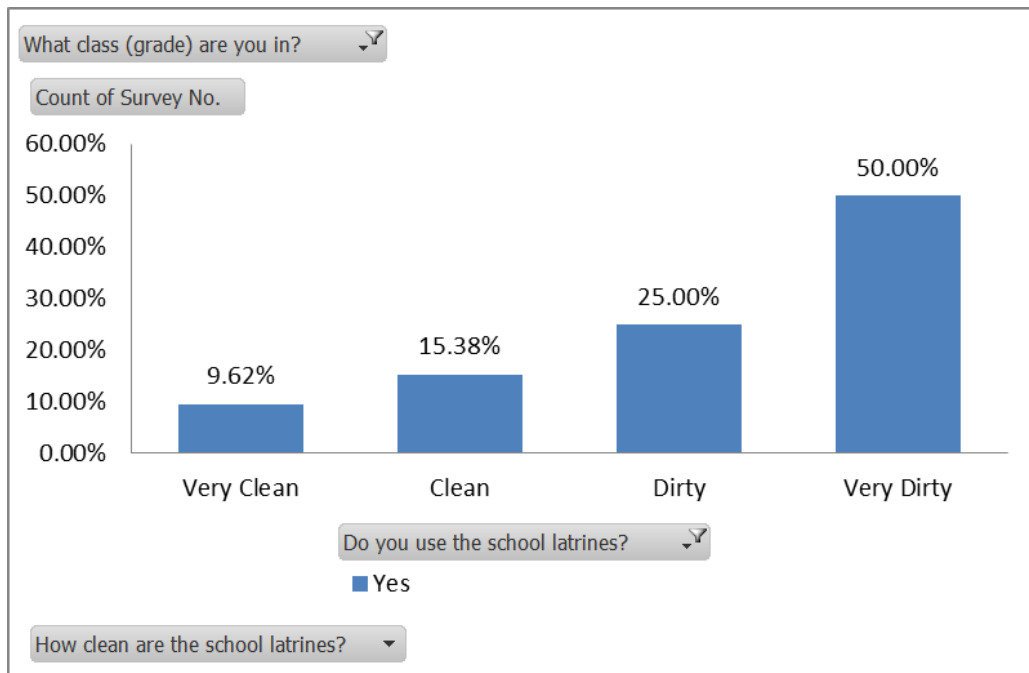


Figure 25 Grade 5 survey responses to “How clean are the school latrines?” from students that said yes, they use the latrines (n = 52).

## CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusion

This thesis has three objectives as follows: 1) to investigate VIP latrine design and establish if the communal school VIP latrines located on the TWI campus were properly designed and constructed, 2) to explore the user preferences and motivations impacting the adoption of these school latrines, and 3) to develop a framework for factors that influence latrine adoption. These goals were formed by the author in response to her Peace Corps experience working at a high school in Zwedru, Liberia from August 2012 to August 2014 and her personal background in appropriate sanitation and environmental engineering.

In January 2014, the author facilitated a “Health, Sanitation, and Environmental Engineering Workshop” for thirty-five health club students. During this workshop, students were taught the importance of sanitation, the existing VIP latrines were cleaned, and a new urinal was constructed. Also during this training, a detailed operation and maintenance plan for the school latrines and hand washing facilities was drafted by students and administrators. However, the plan was not implemented because, at the time, the campus was not enclosed in a fence and there was concern that local community members would continue using and dirtying the facilities. The students and administrators agreed that once a fence and gate were installed to protect the campus and latrines, the operation and maintenance plan would go into effect. The author does not know if the operation and maintenance plan will be implemented and because of her unexpected departure from Liberia (due to the Ebola outbreak), she was not able to follow up

and encourage the adoption of the plan. The author was also unable to conduct classroom sanitation trainings for all grade levels or complete a second set of user preference surveys.

The author was able to perform observations of the communal school VIP latrines and complete one set of user preference surveys. Observations were carried out several times by the author during the 2013-2014 academic year and in May and June 2014, the author administered user surveys to 709 participants from Tubman Wilson Institute (TWI) Junior and Senior High School and J.C. Barlee Elementary School. This observation and survey data was used to fulfill the objectives of this research.

To complete the first thesis objective, the author conducted a detailed literature review and then compared accepted guidelines for VIP latrines to the sanitation facilities located on the TWI campus. The literature review investigated proper design of ventilated improved pit (VIP) latrines, school sanitation guidelines, and recommendations for sanitation in Liberia. A summary of the major design guidelines for VIP latrines is provided in Table 2 while recommendations for school latrines are included in Table 3. Liberia's Ministry of Public Works institutional latrine design criteria is summarized in Table 4. These design guidelines were then used to evaluate the TWI and J.C. Barlee school latrines in Zwedru.

The research focus latrines were two blocks of six stall multicompartiment alternating twin-pit VIP latrines. The author conducted observations of the communal school latrines in order to compare the design and construction of these specific latrines to accepted criteria and recommendations from literature. Due to the author's unexpected departure from Liberia, she was not able to complete all field measurements, so comparisons were made based on recorded observations, photographs, and satellite images. It was found that the latrine vent pipes, cover slabs, drop holes, and pit design all appear to be designed and constructed per national Liberian

and international recommendations. However, the TWI school latrines do not comply with standards for several other latrine design criteria. The latrine superstructures are built with privacy walls located in front of the boys' and girls' stalls and the entranceway doors do not have air gaps. These two features may impair critical odor-controlling air flow from the superstructure through the pit and out the vent pipe. The siting of the school latrines is also inconsistent with guidelines as the latrines are located too close to the classroom building and to the school's water pump. Finally, the ratio of people to latrines on the shared TWI/J.C. Barlee campus is higher than the recommendation of 20-40 students per latrine, or when necessary 60 students per latrine. Ratios of people to latrines at the study site, considering various school populations, are provided in Tables 7 and 8.

The second research objective was to investigate user perceptions of the communal latrines and identify factors that motivate latrine adoption on the Liberian school campus. The design deficiencies identified in the evaluation of thesis objective one were found to impact the user preferences regarding the school latrines. This is apparent from user comments in the surveys that were conducted with 709 participants (students from grades four to twelve, administrators, faculty, and staff) at the study site. User perceptions of the cleanliness, safety, and comfort of the school facilities were varied. For example, 51% of total respondents (n = 709) expressed that the school latrines were dirty or very dirty, while 48% claimed the latrines were clean or very clean. When asked about the safety of the communal latrines, 52% of survey participants said the sanitation facilities were not safe or very unsafe; 47% asserted that the latrines were safe or very safe. Survey participants also had mixed responses about the comfort of the communal sanitation technology: 51% of the 709 survey participants stated that the latrines were not comfortable or very uncomfortable, while 46% declared the facilities were

comfortable or very comfortable. The open-ended survey questions allowed respondents to comment on positive and negative aspects of the communal school VIP latrines. Again answers included various responses, but several key themes arose. As summarized in Table 9, these themes included smell and odor, latrine construction components, presence of feces in and around the latrines, the use of the facilities by outside community members, and health impacts of latrine use.

The final thesis objective was to develop a framework of the factors that impact adoption of communal school latrines. The author originally assumed that user preferences and latrine adoption were directly correlated, but survey results suggest that the two factors may be independently influenced. This is based on the usage rates, 77% total survey participants stating that they use the latrines and 88% of these affirmative respondents explaining that they use the latrines daily, multiple times a week, or weekly. Although these adoption rates are quite high, satisfaction rates for latrine cleanliness, safety, and comfort are merely 50%, as previously described. VIP latrine design factors, like odor control and door construction, and communal sanitation facility characteristics, such as operation and maintenance, may prompt latrine adoption. Individual user traits, such as age, gender, and type and availability of household sanitation technology appear to have a lesser impact on latrine adoption. However, the grade level of the student respondents may have played a role in their responses because of the methods in which the survey was administered and the common practice of cheating. Additional research should be conducted to further understand the factors that impact the adoption of communal sanitation facilities on school campuses. This study accomplished its three main research objectives, yet further research and practical applications must be applied to improve school sanitation in Liberia and worldwide.

## 5.2 Recommendations for Future Research

As found in the literature review, limited research has been conducted regarding communal school sanitation facilities. The majority of field research focuses on preferences for household sanitation facilities. As the Sustainable Development Goals expand upon the Millennium Development Goals to encompass not only improved household sanitation targets, but also school sanitation targets, research must be conducted to understand how to effectively implement holistic school sanitation programs. It is recommended that future research investigate both user preferences for communal school sanitation facilities and adoption rates for such facilities. As discovered through this research, the assumption that user preferences directly influence school latrine adoption may be erroneous so it is also important for research to further explore the relationship between these factors.

Research examining features influencing ownership, operation, and maintenance of communal school facilities would also be useful. The author observed during the sanitation workshop that health club students and administrators understood the importance of implementing an operation and maintenance plan, but this understanding was not enough to motivate them to truly implement and enforce the plan. If future studies were conducted to understand why and how individuals are motivated to maintain shared school facilities, then future school sanitation interventions could be significantly improved.

Because of the limitations of this research, the author has several additional recommendations to strengthen future studies. It is recommended that subsequent research continue to examine user perceptions of sanitation in terms of cleanliness, safety, and comfort, but convenience should also be assessed more directly. The author believes that her personal association with the study site and survey participants may have resulted in biased responses. To



avoid this prejudice, it is suggested that future studies be conducted by neutral parties that are not affiliated with the study sites.

When the study was conducted in 2014 in Liberia, sanitation and personal hygiene were generally secondary notions that were not in the forefront of people's minds. However, due to the recent public health crisis caused by the Ebola outbreak in Liberia and West Africa, hand washing, sanitation, and other personal hygiene habits have become essential functions of everyday life and a matter of life or death. Research investigating the impact of this rapid behavior change on user perceptions of communal sanitation facilities and usage of school facilities would be insightful. The impact of the Ebola virus disease on Liberian culture will likely be long lasting so upcoming school sanitation programs must understand and incorporate these new perceptions into improved sanitation solutions.

### **5.3 Recommendations for Study Site**

Based on this study, the author discovered that the TWI school latrines have some features that do not match VIP latrine design guidelines. First, it is recommended that air gaps be added to the tops of the latrine stall entranceway doors. The addition of these air gaps will facilitate ventilation of the VIP latrines and hopefully improve the odor that was identified by survey respondents as a negative attribute of the school sanitation. Furthermore, the stall latches on the inside of the doors and the locks on the outside of the doors should be replaced. These improvements will assist with the operation and maintenance of the latrines, which leads to the author's final recommendation specific to the study site. She recommends that the TWI school administration implement and enforce the school sanitation operation and maintenance plan that was written in January 2014.

## REFERENCES

- Altaf, M.A. & Hughes, J.A. (1994). Measuring the demand for improved urban sanitation services - results of a contingent valuation study in Ouagadougou, Burkina Faso. *Urban Studies*. 31 (10). pp. 1763–1776.
- Bhagwan, J.N., Still, D., Buckley, C. & Foxon, K. (2008). Challenges with up-scaling dry sanitation technologies. *Water science and technology : a journal of the International Association on Water Pollution Research*. 58 (1). pp. 21–7.
- Black, M. & Fawcett, B. (2008). *The Last Taboo: Opening the Door on the Global Sanitation Crisis*. Earthscan, London, United Kingdom.
- CIA (2014). *Liberia The World Factbook*. Available from: <https://www.cia.gov/library/publications/the-world-factbook/geos/li.html>.
- Dumpert, J.W., Paterson, K.G. & Emerson, P. (2009). Performance assessment for the VIP toilet in the Upper West Region of Ghana. *Waterlines*. 28 (3). pp. 250–259. Available from: <http://developmentbookshelf.com/openurl.asp?genre=article&id=doi:10.3362/1756-3488.2009.026>.
- Exley, J.L.R., Liseka, B., Cumming, O. & Ensink, J.H.J. (2015). The Sanitation Ladder, What Constitutes an Improved Form of Sanitation? *Environmental Science & Technology*. 49. pp. 1086–1094. Available from: <http://pubs.acs.org/doi/abs/10.1021/es503945x>.
- Fry, L.M., Mihelcic, J.R. & Watkins, D.W. (2008). Water and Non-Water-Related Challenges of Achieving Global Sanitation Coverage. *Environmental Science & Technology*. 42 (4). pp. 4298–4304.
- Galvin, C. (2013). *Embodied Energy and Carbon Footprint of Household Latrines in Rural Peru: The Impact of Integrating Resource Recovery*. University of South Florida. Available from: <http://scholarcommons.usf.edu/etd/4489/>.
- Gibson, D.A. (2014). *Inactivation of Ascaris in Double-Vault Urine-Diverting Composting Latrines in Panama: Methods and Environmental Health Engineering Field Applications*. University of South Florida. Available from: <http://scholarcommons.usf.edu/etd/5224/>.
- Government of Liberia National Technical Coordinating Unit (2012). *Guidelines for Community-Led Total Sanitation Implementation in Liberia*.

Greene, L.E., Freeman, M.C., Akoko, D., Saboori, S., Moe, C. & Rheingans, R. (2012). Impact of a school-based hygiene promotion and sanitation intervention on pupil hand contamination in Western Kenya: a cluster randomized trial. *The American Journal of Tropical Medicine and Hygiene*. 87 (3). pp. 385–93. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3435337&tool=pmcentrez&rendertype=abstract>.

Howard, G., Bogh, C., Prüss, A., Goldstein, G., Shaw, R., Morgan, J. & Teuton, J. (2002). *Healthy Villages A guide for communities and community health workers*. Geneva, Switzerland.

Leathes, B., Bonner, R., Das, P., Kalra, R. & Wakeham, N. (2011). *Delivering Cost Effective and Sustainable School Infrastructure*.

Mara, D. (2013). Pits, pipes, ponds--and me. *Water Research*. 47 (7). pp. 2105–17. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23490108>.

Mara, D., Lane, J., Scott, B. & Trouba, D. (2010). Sanitation and Health. *PLoS Med*. 7 (11).

Mara, D.D. (1984). *The Design of Ventilated Improved Pit Latrines, TAG Technical Note No.13*.

Mehl, J., Gibson, D.A., Izurieta, R., Kaiser, J., Hurtado, D. & Mihelcic, J.R. (2010). Pathogen Destruction and Solids Decomposition in Composting Latrines: Study of Fundamental Mechanisms and User Operation in Rural Panama. *Journal of Water and Health*. 9 (1). pp. 187–199.

Mihelcic, J.R. & Hokanson, D.R. (2005). Educational Solutions: For a more Sustainable Future. In: N. L. Nemerow & F. J. Agardy (eds.). *Environmental Solutions*. Elsevier, pp. 25–58.

Mihelcic, J.R., Myre, E.A., Fry, L.M., Phillips, L.D. & Barkdoll, B.D. (2009). *Field Guide in Environmental Engineering for Development Workers: Water, Sanitation, Indoor Air*. American Society of Civil Engineers (ASCE) Press, Reston, VA.

Mihelcic, J.R., Phillips, L.D. & Watkins, D.W. (2006). Integrating a Global Perspective into Engineering Education & Research: Engineering International Sustainable Development. *Environmental Engineering Science*. 23 (3). pp. 426–438.

Minh, H. V. & Hung, N.V. (2011). Economic Aspects of Sanitation in Developing Countries. *Environmental Health Insights*. 5. pp. 63–70. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3212862&tool=pmcentrez&rendertype=abstract>.

Mooijman, A. (2012). *Water , Sanitation and Hygiene ( WASH ) in Schools*. New York.

Murphy, C.M. (2015). *Solids Accumulation Rates of Latrines at Rural Schools in Nimba County, Liberia*. University of South Florida.

Naughton, C.C. (2013). *Assessing Appropriate Technology Handwashing Stations in Mali, West Africa*. University of South Florida. Available from: <http://scholarcommons.usf.edu/etd/4833/>.

Naughton, C.C., Sissoko, H.T. & Mihelcic, J.R. (2015). Assessing Factors that Lead to Usage of Appropriate Technology Handwashing Stations in Mali, West Africa. *Journal of Water, Sanitation, and Hygiene for Development*. Available from: doi:10.2166/washdev.2015.135.

Prüss-Ustün, A., Bartram, J., Clasen, T., Colford, J.M., Cumming, O., Curtis, V., Bonjour, S., Dangour, A.D., De France, J., Fewtrell, L., Freeman, M.C., Gordon, B., Hunter, P.R., Johnston, R.B., Mathers, C., Mäusezahl, D., Medlicott, K., Neira, M., Stocks, M., Wolf, J. & Cairncross, S. (2014). Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: A retrospective analysis of data from 145 countries. *Tropical Medicine and International Health*. 19 (8). pp. 894–905.

Schmitzer, J. & Hall, C. (2014). *Liberia 's Second Annual Water , Sanitation & Hygiene Joint Sector Review : Event Report*.

Seymour, Z., Kovalchick, L., Ponitz, L. & Hughes, J. (2011). Sanitation in Developing Countries – Understanding User Preferences and Experiences. In: *2011 Oklahoma University International WaTER Conference*. 2011.

Seymour, Z.A.Z. (2013). *Understanding What Sanitation Users Value - Examining Preferences And Behaviors For Sanitation Systems*. Georgia Institute of Technology. Available from: <https://smartech.gatech.edu/handle/1853/52168>.

The Republic of Liberia (2013). *Liberia Water Supply, Sanitation and Hygiene WASH Sector Investment Plan 2012-2017 Summary Report*.

The Republic of Liberia Ministry of Public Works (2010). *The Guidelines For Water And Sanitation Services In Liberia*.

U.S. Agency for International Development (2010). *Liberia Water and Sanitation Profile*.

UN (2014). *Open Working Group proposal for Sustainable Development Goals*. Available from: [http://sustainabledevelopment.un.org/content/documents/1579SDG\\_Proposal.pdf](http://sustainabledevelopment.un.org/content/documents/1579SDG_Proposal.pdf).

UN Statistics Division (2005). *DEFINITION OF “ URBAN . ”* Available from: [http://unstats.un.org/unsd/demographic/sconcerns/densurb/Defintion\\_of\\_Urban.pdf](http://unstats.un.org/unsd/demographic/sconcerns/densurb/Defintion_of_Urban.pdf).

UNDP (2014). *Human Development Report 2014 Liberia*. Available from: [http://hdr.undp.org/sites/all/themes/hdr\\_theme/country-notes/LBR.pdf](http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/LBR.pdf).

UNICEF (2013). *UNICEF Situation Report No. 72 - Liberia*.

United Nations (2013). *Liberia Critical Humanitarian Gaps*.

Water and Sanitation Program (2012). *Liberia Economic Impacts Of Poor Sanitation In Africa*.

Whittington, D., Lauria, D.T., Choe, K., Hughes, J.A., Swarna, V. & Wright, A.M. (1993a). Household sanitation in Kumasi, Ghana - A description of current practices, attitudes, and perceptions. *World Development*. 21 (5). pp. 733–748.

Whittington, D., Lauria, D.T., Choe, K., Hughes, J.A., Swarna, V. & Wright, A.M. (1993b). Household demand for improved sanitation services in Kumasi, Ghana: A contingent valuation study. *Water Resources*. 29 (6). pp. 1539–1560.

WHO/UNICEF JMP (2012). A Snapshot of Drinking Water and Sanitation in Africa – 2012 Update. In: *African Ministers' Council on Water (AMCOW) Fourth Africa Water Week*. 2012, Cairo, Egypt.

WHO/UNICEF JMP (2014a). *Progress on Drinking Water and Sanitation - 2014 Update*. Geneva, Switzerland. Available from:  
[http://www.wssinfo.org/fileadmin/user\\_upload/resources/JMP\\_report\\_2014\\_webEng.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/JMP_report_2014_webEng.pdf).

WHO/UNICEF JMP (2014b). *WASH Targets and Indicators Post-2015: Recommendations from International Consultations, Comprehensive Recommendations*. Available from:  
[http://www.wssinfo.org/fileadmin/user\\_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf).

WHO/UNICEF JMP (2014c). *Liberia Estimates on the use of water sources and sanitation facilities* Available from:  
[http://www.wssinfo.org/documents/?tx\\_displaycontroller%5Btype%5D=country\\_files&tx\\_displaycontroller%5Bsearch\\_word%5D=Liberia](http://www.wssinfo.org/documents/?tx_displaycontroller%5Btype%5D=country_files&tx_displaycontroller%5Bsearch_word%5D=Liberia).

Wilbur, P.A. (2014). *An Evaluation of the Use of Composting Latrines and the Perceptions of Excrement in Ngabe Communities in Panama*. University of South Florida. Available from:  
<http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=6527&context=etd>.

World Health Organization (2015a). *Ebola Response Roadmap - Situation Report*. Available from: <http://www.who.int/csr/disease/ebola/situation-reports/en/> (Accessed: 15 June 2015).

World Health Organization (2015b). *Ebola Prevention and Control*. Available from:  
<http://apps.who.int/ebola/about-ebola/ebola-factsheet/prevention-and-control>.

## APPENDICES

## Appendix A. Tubman Wilson Institute (TWI) Health, Sanitation, and Environmental Engineering Workshop Schedule and Information and Notes

### *Tubman Wilson Institute (TWI) Health, Sanitation, and Environmental Engineering Workshop*

January 2014

Hosted by TWI Student Health Club and TWI Peace Corps Volunteer  
Funded by Peace Corps Small Projects Assistance Grant

#### *Schedule*

##### *Monday, January 27, 2014*

9:00 am – 9:30 am: Registration  
9:30 am – 10:00 am: Welcome and Introduction: Sarah Ness, Joe Farley  
Remarks: Principal Brown K. Bardee  
10:00 am – 11:00 am: Introduction to Health and Sanitation: Isaac Fredricks  
11:00 am – 11:45 am: Introduction to Environmental Engineering: Sarah Ness  
11:45 am – 12:45 pm: Lunch  
12:45 pm – 1:30 pm: F-diagram: Anita Tokpah  
1:30 pm – 2:15 pm: Hand Washing: Ben Roberts  
2:15 pm – 3:15 pm: Latrines: Sarah Ness  
3:15 pm – 4:30 pm: Preparation for Classroom Presentations for J.C. Barlee Elementary  
Tubman Wilson Institute: All Workshop Participants

##### *Tuesday, January 28, 2014*

9:00 am – 12:00 pm: Development of Operation and Maintenance Plan for School Sanitation  
Facilities  
12:00 pm – 1:00 pm: Lunch  
1:00 pm – 3:00 pm: Cleaning Preparation

##### *Wednesday, January 29, 2014*

8:00 am – 12:00 pm: Latrine Cleaning and Urinal Construction: All Workshop Participants  
12:00 pm – 1:00 pm: Lunch

##### *Thursday, January 30, 2014*

9:00 am – 12:00 pm: Urinal Construction

1 Health, Sanitation, and Environmental Engineering Workshop

**Tubman Wilson Institute (TWI)**  
**Health, Sanitation, and Environmental Engineering Workshop**

**Information and Notes**

**Health and Sanitation**

Health can be defined as the complete physical, mental, and social well-being of a person. It generally includes the absence of disease and illness.

Sanitation is the process of promoting health by keeping places clean from infection and disease by removing waste, dirt, and feces. We generally think of sanitation facilities as technologies that safely dispose human urine and feces.

Improved sanitation technologies provide a separation, or barrier, between humans and human feces. The following are improved sanitation facilities:

1. Connection to public sewer
2. Connection to septic system
3. Pour-flush latrines
4. *Ventilated improved pit (VIP) latrines*
5. Composting latrines
6. *Traditional pit latrines*

Pit latrines with a slab and pit latrines without a slab are the most common types of improved sanitation in Liberia. However, the latrines located on the Tubman Wilson Institute and J.C. Barlee campus are ventilated improved pit (VIP) latrines. More details on pit latrines and VIP latrines are provided later in this workshop packet.

***Sanitation in Liberia***

Indicator	Rural	Urban	Remarks
Percent of population with access to improved sanitation facilities	12%	40%	These are facilities that ensure separation of human waste from human contact.
Percent of people that practice open defecation	69%	22%	Open defecation refers to practices that do not separate person from the waste. It includes pooping openly on the ground, in water, and in plastic bag.
Percent of population observed to wash hands with soap after latrine use	4%	8%	

**Environmental Engineering**

Environmental engineers use engineering, public health, math, science, physics, chemistry, biology, and economics to protect human health and the environment. Today, environmental engineers study issues like waste management, drinking water quality, and wastewater treatment.

In Liberia, environmental engineers can work for NGOs and the Liberian Government (Ministry of Public Works). Environmental engineers will play a key role in the development of the country.



### Hand Washing

Why should I wash my hands?

Hand washing with soap is very important for keeping people healthy and preventing illness. Washing your hands correctly can decrease sickness and diarrhea (runny stomach).

Who should wash their hands?

Everyone should wash their hands: adults, old people, young people, children, and babies. If children and babies are not able to wash their hands alone, adults or older children should help them.

When should I wash my hands?

- Before eating
- Before cooking
- Before breastfeeding
- After using the latrine
- After cleaning a baby's diaper
- After working

What should I use to wash my hands?

You should always wash your hands with water and soap.

How should I wash my hands?

1. Wet your hands with water.
2. Rub soap on your hands.
3. Rub your hands together for 15 seconds. Be sure to clean between fingers and under your nails.
4. Rinse your hands with water.
5. Let the air dry your hands or wipe them on a clean towel.

### Urinal Facility

Urinals are sanitation facilities that can be used to collect and dispose of urine (pee pee) and provide privacy and protection to the user while urinating. Urinals are easy and inexpensive to build and are also easy to operate and maintain. Operation includes cleaning the floor and urine channel with small water and soap every day. For maintenance, the floor and urine channel must be checked for cracks and repaired and the delivery pipe must be checked to make sure it is not blocked.

Urine is normally sterile, which means that it contains no harmful bacteria. When urine is diluted with water (about 1 cup urine to 4 cups water), the mixture can be used to fertilize plants, farms, and gardens.

To provide additional privacy and sanitation on campus, we will be constructing a urinal facility separated for girls and boys. The system will include a soak pit system that will allow the urine to soak into the ground.

## Latrines

A latrine is a safe and private place used for defecation. It is a sanitation facility that is used to separate, or provide a barrier, between humans and human feces. Human feces have harmful pathogens that can cause illness in humans so it must be properly contained in order to keep people healthy.

### *Traditional Pit Latrines*

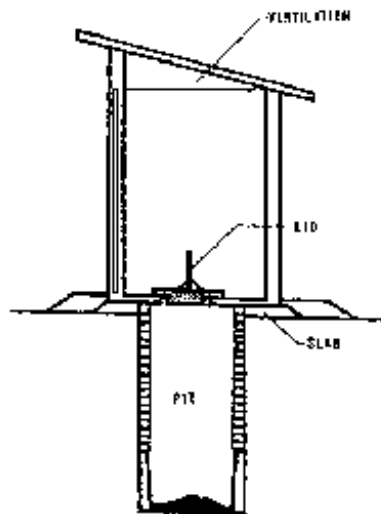
Hole dug into the ground and covered by a slab with a hole and privacy shelter

#### Advantages:

- Simplest and least expensive to build
- No water required for operation
- Do not require emptying; little maintenance required

#### Disadvantages:

- Bad odors and flies
- Danger of children falling into holes



### *Ventilated Improved Pit (VIP) Latrines*

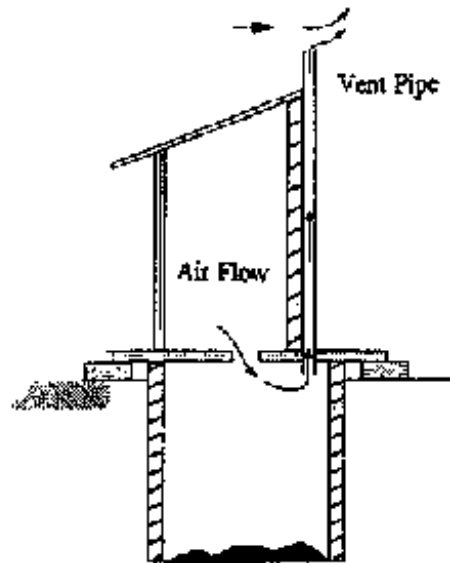
Hole dug into the ground and covered by a slab with a hole and privacy shelter; also includes a vent pipe (with screen) from the pit to the outside air

#### Advantages:

- Less odors and flies due the vent pipe and screen
- No water required for operation
- Do not require emptying; little maintenance required

#### Disadvantages:

- Dark inside the structure
- More cost for PVC vent pipe



### Operation and Maintenance of Sanitation Facilities

Responsibilities for operation and maintenance should be clearly defined. A cleaning routine should be followed to ensure clean, safe, and functioning sanitation facilities at all times. Latrines and urinals should be cleaned once a day with water and a disinfectant.

#### Questions to Consider

1. Are the sanitation facilities being used properly?
2. Who is responsible for cleaning the sanitation facilities?
3. What costs are involved in the operation and maintenance of the school's sanitation facilities?
4. Who should fill the hand washing stations with water?
5. Is there tissue and soap available?
6. Who is responsible for repairing facilities?
7. Who is responsible for buying cleaning materials?
8. Are the inside locks on the doors working?
9. Are the outside locks on the doors working? When should the doors be locked? Who should keep the keys?

#### References

1. *2013 WASH Baseline Study, A 2013 study on current community access to and practices on Water, Sanitation, and Hygiene in select rural and urban settlements in Liberia.* Unicef and Oxfam. 31 October 2013.
2. Mihelcic, J. R., Myre, E.A., Fry, L. M., Phillips, L. D., and Barkdoll, B. D. *Field Guide to Environmental Engineering for Development Workers: Water, Sanitation, and Indoor Air.* Reston, VA: ASCE, 2009.
3. Peace Corps Water, Sanitation, and Hygiene Overview Documents and Resources for Volunteers.
4. Latrine diagrams from <http://helid.digicollection.org/en/d/Js13461e/3.4.html>.

## Appendix B. Tubman Wilson Institute (TWI) Sanitation Facilities Operation and Maintenance (O&M) Plan

### *Tubman Wilson Institute (TWI) Sanitation Facilities Operation and Maintenance (O&M) Plan*

#### **Introduction**

The following proposal was developed with the intention of clearly defining roles and responsibilities for operation and maintenance (O&M) of the sanitation facilities on the campus shared between Zwedru Kindergarten, J.C. Barlee Elementary, and Tubman Wilson Institute (TWI) in Zwedru, Grand Gedeh County, Republic of Liberia.

During TWI's Health, Sanitation, and Environmental Engineering Workshop in January 2014, there was a discussion regarding O&M for the campus sanitation facilities and from that discussion, this proposal was developed. During the Workshop, topics, such as health and sanitation, hand washing, f-diagram, and latrine maintenance, were presented. After the informational lectures, all students participated in a discussion on future O&M for the sanitation facilities and assisted in cleaning the existing latrines on campus. Participants included approximately 30 students from J.C. Barlee Elementary and Tubman Wilson Institute schools, administration and staff from Zwedru Kindergarten, J.C. Barlee Elementary, and Tubman Wilson Institute. The Workshop was sponsored by Peace Corps and facilitated by Isaac Q. Fredricks, Ben Roberts, and Sarah Ness.

#### **Questions to Consider**

The following questions were presented to the students attending the Workshop and discussed by all participants in order to develop a Sanitation Facilities Operation and Maintenance (O&M) Plan.

1. Are the sanitation facilities being used properly?
2. Who is responsible for cleaning the sanitation facilities?
3. What costs are involved in the operation and maintenance of the school's sanitation facilities?
4. Who should fill the hand washing stations with water?
5. Is there tissue and soap available?
6. Who is responsible for repairing facilities?
7. Who is responsible for buying cleaning materials?
8. Are the inside locks on the doors working?
9. Are the outside locks on the doors working? When should the doors be locked? Who should keep the keys?

#### **Sanitation Facilities on Campus**

The sanitation facilities on the school campus, which is shared by the three schools, include the following:

- 3 Latrine Blocks, each with 2 stalls for girls, 2 stalls for boys, and 2 stalls for teachers
- 6 Hand washing stations
- 1 Urinal Block with 1 stall for boys and 1 stall for girls

Each school is the owner of, and thus responsible for, one latrine block. The latrine block and two hand washing stations closest to the Zwedru Kindergarten classrooms and offices (far right latrine block) are for Zwedru Kindergarten. The urinal facility, middle latrine block, and hand washing station directly behind the kitchen are for TWI. The final latrine block and two hand washing stations (on the far left) are for J.C. Barlee Elementary. The final hand washing station, located in front of the kitchen area, will be shared among all the schools and available for anyone using the kitchen facility.

#### **Responsibilities for O&M Activities**

O&M activities are entirely managed by the schools for their respective sanitation facilities. Responsibilities for O&M should be clearly defined and a cleaning routine should be followed to ensure clean, safe, and functioning sanitation facilities.

***Tubman Wilson Institute (TWI)***  
***Sanitation Facilities Operation and Maintenance (O&M) Plan***

**Tubman Wilson Institute O&M Plan**

The latrine and urinal stalls should be cleaned daily with water and disinfectant and should be locked at all times. Access keys for the facilities will be available for TWI students and faculty in the Vice Principal for Instruction's office during regular school hours. The hand washing stations should be filled with water daily.

Health club students will take the lead role in daily cleaning and maintenance of TWI's sanitation facilities. Responsibilities of the health club students will include the following:

- Daily cleaning of latrine stall and urinal with water and disinfectant. This cleaning should occur before the start of classes/during devotion so that the facilities are clean and safe for use during the school time.
- Coordinating daily with campus police to have later-comer students fill the hand washing station with water.
- Ensuring that the latrine and urinal stalls are always locked and checking that the outside locks and inside latches are functioning. If broken or spoiled, health club officials should contact the school administration for immediate repairs.
- Educating students on proper health and sanitation behaviors and providing health and sanitation announcements during devotion. This should be done in coordination with the school administration.
- Providing funds, from Health Club dues, for the daily O&M costs, such as toilet tissue and hand soap. Financial responsibilities for cleaning materials, like disinfectant, yard brooms, and buckets, will be shared by the health club and the school administration.

TWI administration responsibilities will include the following:

- Supporting health club students in achieving their duties.
- Providing health and sanitation messages and announcements to the students and faculty in collaboration with the health club students.
- Holding materials, including latrine keys, tissue, and hand soap, in the office of the Vice Principal for Instruction (VPI).
- Providing funds for sanitation facility repairs, including new locks and latches when needed. Financial responsibilities for cleaning materials, like disinfectant, yard brooms, and buckets, will be shared by the health club and the school administration.

Responsibilities of individuals from the entire school population, including students, administration, faculty, and staff, include:


- Returning the facility key and hand soap to the VPI's office after use.
- Using the facilities properly to minimize cleaning and maintenance efforts.
- Following good health and sanitation behaviors and listening to announcements and educational information provided by the health club students and school administration.

## Appendix C. Permission for Reproduction of Figures

Below is permission for the use of Figure 2.

2/19/2015 Copyright Clearance Center

DIRECTPATH GET PERMISSION PRODUCTS & SOLUTIONS EDUCATION ABOUT US



Note: Copyright.com supplies permissions but not the copyrighted content itself.

1 PAYMENT 2 REVIEW 3 CONFIRMATION

**Step 3: Order Confirmation**

Thank you for your order! A confirmation for your order will be sent to your account email address. If you have questions about your order, you can call us at +1.855.239.3415 Toll Free, M-F between 3:00 AM and 6:00 PM (Eastern), or write to us at [info@copyright.com](mailto:info@copyright.com). This is not an invoice.

**Confirmation Number: 11298729**  
**Order Date: 02/15/2015**


If you paid by credit card, your order will be finalized and your card will be charged within 24 hours. If you choose to be invoiced, you can change or cancel your order until the invoice is generated.

**Payment Information**

Sarah Ness  
[ness.sarah@gmail.com](mailto:ness.sarah@gmail.com)  
+1 (410)9674054  
Payment Method: n/a

**Order Details**

Field guide to environmental engineering for development workers : water, sanitation, and indoor air

Order detail ID: 66161202	<b>Permission Status:</b>  Granted
Order License Id: 3570380534453	Permission type: Republish or display content
ISBN: 978-0-7844-0985-5	Type of use: Journal/magazine
Publication Type: Book	<a href="#">View details</a>
Publisher: ASCE	
Author/Editor: Mihelcic, James R. ; Carter, Jimmy	


Note: This item will be invoiced or charged separately through CCC's RightsLink service. [More info](#) **\$ 0.00**

**Total order items: 1** This is not an invoice. **Order Total: 0.00 USD**

<https://www.copyright.com/confirm/ColCartPurchase.do?operation=confirmPurchase> 1/1

Below is permission for the use of Figure 3.

6/23/2015 OKR: Terms of Use

 WORLD BANK GROUP (<http://www.worldbank.org>)

(/)

## Terms of Use

### Description

The World Bank supports the free online communication and exchange of knowledge as the most effective way of ensuring that the fruits of research, economic and sector work, and development practice are made widely available, read, and built upon. It is therefore committed to open access, which, for authors, enables the widest possible dissemination of their findings and, for researchers, readers, and users, increases their ability to discover pertinent information. To learn more about our Open Knowledge Repository (OKR) please visit our [About page](#) (about).

### Intellectual Property Rights - Licenses

You are encouraged to use the OKR to benefit yourself and others in creative ways. By using this website and any of the materials made available through it (the "Works"), you agree to be bound by these Terms of Use for OKR.

The World Bank allows you to use the Works, subject to your compliance with certain license terms, but still retains the copyright to all of the Works in the OKR, unless specifically noted to the contrary.

The majority of Works in the OKR are licensed under a Creative Commons Attribution license (CC BY 3.0 IGO) (<http://creativecommons.org/licenses/by/3.0/igo/>)

Some Works within the OKR are not subject to the CC BY license, but are available under other terms. Such Works will be clearly labeled with the specific license terms under which those Works may be used.

### Third Party Content

In general, no matter what license applies to each particular Work, The World Bank does not necessarily own each component of the content included in the Works. The World Bank therefore does not warrant that the use of any third-party-owned individual component or part contained in the OKR will not infringe on the rights of third parties. The risk of claims resulting from such infringement rests solely with you. If you wish to re-use a component of the Work, it is your responsibility to determine whether permission is needed for that re-use and to obtain permission from the copyright owner.

### Attribution

Regardless of any other license terms governing the use of a Work, any use of the OKR Works or their content must be attributed to The World Bank and its content providers with a copyright notice in the following format:

[Authors']. [Year of publication]. [Title'']. © [Publisher\*\*\*]. [OKR handle URI] License: [License\*\*\*\*]

\*Semi-colon separated if more than one author. Standardized as [last name], [first name], [middle name]

\*\* Italics

\*\*\* Usually "World Bank"

\*\*\*\* Usually "Creative Commons Attribution CC BY"

Example (note that the URI is a placeholder)

Lin, Justin Y. 2012. *New Structural Economics: A Framework for Rethinking Development and Policy*. © World Bank. <http://hdl.handle.net/123123123123/123> License: Creative Commons Attribution license (CC BY 3.0 IGO) (<http://creativecommons.org/licenses/by/3.0/igo/>)

This example reflects minimum attribution requirements. For academic citation purposes, more complete attribution can be given in compliance with standard academic practices.

### Translations of World Bank Works

Unless you have a specific agreement with the World Bank to the contrary, if you use Works from the OKR under CC BY or other licenses that allow you to make translations, and you create translations of those works for any purpose, you must add the following explanation to the translation after the attribution language:

This translation was not created by The World Bank and should not be considered an official World Bank translation. The World Bank shall not be liable for any content or error in this translation.

### Adaptations of World Bank Works

Unless you have a specific agreement with The World Bank to the contrary, if you use Works from the OKR under CC BY or other licenses that allow you to make adaptations and you create adaptations of those works for any purpose, you must add the following explanation to the adaptation after the attribution language:

"This is an adaptation of an original work by The World Bank. Responsibility for the views and opinions expressed in the adaptation rests solely with the author or authors of the adaptation and are not endorsed by The World Bank."

### No Endorsement

You may not publicly represent or imply that The World Bank is participating in, or has sponsored, approved or endorsed the manner or purpose of your use or reproduction of Works from the OKR. The World Bank retains all rights to prosecute, to the fullest extent of the law, any use of its Works in a manner that falsifies, misrepresents, disparages or fraudulently uses the Works, or disparages or harms the reputation of The World Bank.

### No Association, No Use of World Bank Logo and Name

You may not use any trademark, official mark, official emblem, or logo of The World Bank, or any of its other means of promotion or publicity, without The World Bank's prior written consent or in any event to represent or imply an association or affiliation with The World Bank.

### Other

These OKR Terms may be amended by The World Bank from time to time at our sole discretion. Upon amendment, we will place a notice on <https://openknowledge.worldbank.org/terms-of-use> (<https://openknowledge.worldbank.org/terms-of-use>). Please periodically review the controlling version of these OKR Terms. By continuing to use the OKR subsequent to The World Bank making available an amended version of these OKR Terms, you acknowledge, agree and consent to such amendment.

<https://openknowledge.worldbank.org/terms-of-use> 1/2

The World Bank offers other websites, services and databases that are governed by different terms of use, as stated in the World Bank terms and conditions (<http://www.worldbank.org/terms>), or in any terms and conditions specific to such websites, services and databases. Please review the applicable terms of use before using any websites, services and databases provided or made available by The World Bank. Please note that failure to comply with these Terms of Use, or with the license terms applicable to any Work, including proper attribution format or retaining copyright notices as required, may be grounds for the World Bank to restrict or prohibit your access to the OKR. In addition, The World Bank reserves all rights and legal remedies for those violations.

No agency, partnership, joint venture, employee-employer or franchiser-franchisee relationship is intended, entered, or created by these OKR Terms.

Nothing herein shall constitute or be considered to be a limitation upon or waiver of the privileges and immunities of The World Bank, all of which are specifically reserved. Any dispute between The World Bank and you arising out of, or in connection with, the OKR, the Works, or your use of the OKR which cannot be amicably settled between the parties to such dispute shall be arbitrated in accordance with the UNCITRAL Arbitration Rules as then in force. The arbitral tribunal shall consist of a sole arbitrator and the language of the proceedings shall be English. The arbitration shall take place in the District of Columbia. The arbitral proceedings shall be conducted remotely (e.g., via telephone conference or written submissions) whenever practicable. Any resulting arbitration decision shall be final and binding on both parties.

If you have questions about these Terms of Use, or about the license terms applicable to any specific Work in the OKR, please contact us by sending an email to [pubrights@worldbank.org](mailto:pubrights@worldbank.org) (<mailto:pubrights@worldbank.org>).

If you believe that your rights, or the rights of a third party, including any intellectual property rights, are being violated in any way by any Works on the OKR, please contact us by sending an email to [legalhelpdesk@worldbank.org](mailto:legalhelpdesk@worldbank.org). (<mailto:legalhelpdesk@worldbank.org>)

**These Terms of Use have been last amended on: December 18, 2013**

(<http://www.worldbank.org>)

IBRD (<http://www.worldbank.org/ibrd>) IDA (<http://www.worldbank.org/ida>) IFC (<http://www.ifc.org/>) MIGA (<http://www.miga.org/>) ICSID (<http://icsid.worldbank.org/>)

Legal (<http://www.worldbank.org/legalinfo>) | Access to Information (<http://go.worldbank.org/TRCDVYJ440>) | Jobs (<http://go.worldbank.org/NLCQMY3UZ0>) | Site Map (<http://www.worldbank.org/sitemap>) | Contact (<http://www.worldbank.org/contacts>)

© 2015 The World Bank Group, All Rights Reserved. (<http://www.worldbank.org/>)

**Fraud & Corruption Hotline**


1-800-831-0463

(<http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/ORGUNITS/EXTDOI/0,,contentMDK:20659616~menuPK:1702202~pagePK:64168445~piPK:64168309~theSitePK:588921,00.html>)



Below is permission for the use of Figure 3.

6/23/2015 Creative Commons — Attribution 3.0 IGO — CC BY 3.0 IGO

 [Creative Commons](#)

## Creative Commons License Deed

**Attribution 3.0 IGO (CC BY 3.0 IGO)**


This is a human-readable summary of (and not a substitute for) the [license](#).  
[Disclaimer](#)

**You are free to:**


- Share** — copy and redistribute the material in any medium or format
- Adapt** — remix, transform, and build upon the material

for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.



**Under the following terms:**

-  **Attribution** — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
- No additional restrictions** — You may not apply legal terms or [technological measures](#) that legally restrict others from doing anything the license permits.

**Notices:**

When the Licensor is an intergovernmental organization, disputes will be resolved by [mediation and arbitration](#) unless otherwise agreed.

You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable [exception or limitation](#).

No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as [publicity, privacy, or moral rights](#) may limit how you use the material.

<https://creativecommons.org/licenses/by/3.0/igo/> 1/2

6/23/2015

Creative Commons — Attribution 3.0 IGO — CC BY 3.0 IGO

You may also use a license listed as compatible at <https://creativecommons.org/compatiblelicenses>

[More info.](#)

A commercial use is one primarily intended for commercial advantage or monetary compensation.

[More info.](#)

Merely changing the format never creates a derivative.

[More info.](#)

This content is freely available under simple legal terms because of Creative Commons, a non-profit that survives on donations. If you love this content, and love that it's free for everyone, please consider a donation to support our work.

Donate Now

<https://creativecommons.org/licenses/by/3.0/igo/>

2/2

## Appendix D. Study Approvals from IRB



RESEARCH INTEGRITY AND COMPLIANCE  
Institutional Review Boards, FWA No. 00001669  
11901 Bruce B. Downs Blvd., MDC033 • Tampa, FL 33612-4799  
813.974-5638 • FAX:813.974-7091

January 21, 2014

Sarah Ness  
Civil and Environmental Engineering  
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**

IRB#: Pro00015901

Title: Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia

**Study Approval Period: 1/18/2014 to 1/18/2015**

Dear Ms. Ness:

On 1/18/2014, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

**Approved Item(s):**

**Protocol Document(s):**

[Ness VIP Latrine Study Protocol v1 01.07.14.docx](#)

Study involves children and falls under 45 CFR 46.404: Research not involving more than minimal risk.

**Consent/Assent Document(s)\*:**

[Ness VIP Latrine Study Child Written Assent v1 01.13.14.docx.pdf](#)

[Ness VIP Latrine Study Adult Consent v1 01.13.14.docx.pdf](#)

[Ness VIP Latrine Study Parental Consent v1 01.15.14.docx.pdf](#)

Child Verbal Assent (not stamped)

\*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review

research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,



John Schinka, Ph.D., Chairperson  
USF Institutional Review Board



RESEARCH INTEGRITY AND COMPLIANCE  
Institutional Review Boards, FWA No. 00001669  
12901 Bruce B. Downs Blvd., MLN3035 • Tampa, FL 33612-4999  
813.974.5638 • FAX 813.997.47091

February 24, 2014

Sarah Ness  
Civil and Environmental Engineering  
Tampa, FL 33612

RE: **Expedited Approval for Amendment**  
IRB#: Ame1\_Pro00015901  
Title: Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia

Dear Ms. Ness:

On 2/24/2014, the Institutional Review Board (IRB) reviewed and **APPROVED** your Amendment. The submitted request has been approved for the following:

**Changes to Consent:** Given the difficulties in recruitment and consent because of cultural barriers, a waiver of informed consent process (45 CFR 46.116 (d)) for the Parental Permission is approved. The alternative of having the principal of the school sign consent form for students in lieu of parents is an acceptable method of providing protection for the children in this study. This study involving child participants falls under the minimal risk category 45 CFR 46.404: Research not involving greater than minimal risk.

**Consent Document(s)\*:**

[Ness VIP Latrine Study Principal Consent v1 02.13.14.docx.pdf](#)

\*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab on the main study's workspace. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s) and replace previously approved versions.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,



John Schinka, Ph.D., Chairperson  
USF Institutional Review Board



UNIVERSITY OF LIBERIA  
CAPITOL HILL  
MONROVIA, LIBERIA  
WEST AFRICA



Office of the Institution Review Board

April 7, 2014

Sarah Ness  
Principal Investigator  
Peace Corps Volunteer and University of South Florida  
Webb Quarter  
Zwedru, Grand Gedeh County  
Liberia

**Re:** Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia

Dear Ms. Ness,

In accordance with 45 CFR 46, the human subjects protocol of the above mentioned research pilot study has been approved by the University of Liberia -Pacific Institute for Research & Evaluation Institutional Review Board (UL-PIRE IRB) through an expedited review on April 4, 2014. This IRB will review the protocol during the implementation of the study to confirm human subject procedures. This approval expires on October 3, 2014.

Should there be other additional changes in protocols or incidents involving human subjects during the conduct of this research, you are required to report them right away to the IRB. Changes in research during the period for which IRB approval has already been granted may not be implemented without prior IRB review and approval; except where necessary to protect subjects. Additional proposed changes to approve human subject protocol must be reported promptly to the IRB for review using a continuation review format.

The IRB will require you to submit a progress report during the implementation of this study. For your record, our Federal-wide Assurance number is FWA 00004853, and our organization number is 10R0004301.

Kind regards,

Sincerely yours,

  
Ms. Cecelia A. Morris, MSN  
Chairperson, ULPIRE-IRB

E-mail: [morris.cecilia@yahoo.com](mailto:morris.cecilia@yahoo.com) / [ccmorris@ul-pireafrcd.org](mailto:ccmorris@ul-pireafrcd.org) Phone: 0086-527-833 / 0886-582-774

## Appendix E. Informed Consent and Assent Forms Approved by IRB

Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Informed Consent\_v1\_01.13.14

Sarah Ness  
Peace Corps Volunteer, Liberia, West Africa  
Department of Civil and Environmental Engineering  
University of South Florida  
IRB Study # Pro 15901

University of South Florida (USF) International Review Board (IRB)  
Informed Consent to Participate in Research

*Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia*

**Why am I being asked to take part in this research?**

You are being asked to take part in a research study about the school latrines. You are being asked to take part in this research study because you attend, or work at, J.C. Barlee Elementary or Tubman Wilson Institute (TWI) in Zwedru, Grand Gedeh County. If you take part in this study, you will be one of about 1,000 people at this site.

**Who is doing this study?**

The person in charge of this study is Sarah Ness, the TWI Peace Corps Volunteer.

**What is the purpose of this study?**

By doing this study, we hope to learn when the school latrines are used and what people like about the latrine designs.

**Where is the study going to take place and how long will it last?**

The study will be take place at your school. The surveys will be given on campus during the second semester. There will be three months between the first survey and the second survey.

**What will you be asked to do?**

You will be asked to participate by taking two surveys that will ask questions about the school latrines. Between the surveys, you will participate in a sanitation and health lesson that will be given during your normal school classes.

**What things might happen if you participate?**

To the best of our knowledge, your participation in this study will not harm you.

**Is there benefit to me for participating?**

We cannot promise that you will receive benefit from taking part in this research study. However, by taking part in this study you might learn more about the school latrines and how to help keep them clean and improve your health.

**What other choices do I have if I do not participate?**

You have the alternative to choose not to participate in this research study. Your grades will not be affected in any way if you do not participate.

Version 1, 01.13.14, eIRB# 15901



Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Informed Consent\_v1\_01.13.14

**Do I have to take part in this study?**

You should talk with your parents or guardian and others about taking part in this research study. If you do not want to take part in the study, that is your decision. You should take part in this study because you want to volunteer.

**Will I receive anything for taking part in this study?**

You will not receive anything for taking part in this study.

**Who will see the information about me?**

Your information will be added to the information from other people taking part in the study so no one will know who you are. Also, the surveys will not ask for your name so the information you provide will not be directly connected to you.

**Can I change my mind and quit?**

If you decide to take part in the study, you can stop participating at any time. No one will think badly of you if you decide to stop.

**What if I have questions?**

You can talk with the Peace Corps Volunteer, Sarah Ness, at any time if you have questions about the study. You can also talk to your parents, teachers, or school administration if you have questions.

Version 1, 01.13.14, eIRB# 15901

Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Informed Consent\_v1\_01.13.14

#### Consent to Participate

I understand what the person conducting this study is asking me to do. I have thought about this and agree to take part in this study. If you want to take part, please sign the form, if the following statements are true. I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I am 18 years or older.

\_\_\_\_\_  
Name of person agreeing to take part in the study

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of person agreeing to take part in the study

#### Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect. I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What the potential benefits might be.
- What procedures/interventions will be used.
- What the known risks might be.

\_\_\_\_\_  
Signature of Person Obtaining Informed Consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Person Obtaining Informed Consent

Version 1, 01.13.14, eIRB# 15901

Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Assent\_v1\_01.13.14

**Assent to Participate**

I understand what the person conducting this study is asking me to do. I have thought about this and agree to take part in this study. If you want to take part, please sign the form, if the following statements are true. I freely give my assent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I am 12 to 17 years of age.

\_\_\_\_\_  
Name of person agreeing to take part in the study

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of person agreeing to take part in the study

\_\_\_\_\_  
Name of person providing information (assent) to subject

\_\_\_\_\_  
Date

**Statement of Person Obtaining Assent**

I have carefully explained to the person taking part in the study what he or she can expect. I hereby certify that when this person signs this form, to the best of my knowledge, he or she understands:

- What the study is about.
- What the potential benefits might be.
- What procedures/interventions will be used.
- What the known risks might be.

\_\_\_\_\_  
Signature of Person Obtaining Assent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Person Obtaining Assent

Version 1, 01.13.14, eIRB# 15901

Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Assent Script\_v1\_01.13.14

Sarah Ness  
Peace Corps Volunteer, Liberia, West Africa  
Department of Civil and Environmental Engineering  
University of South Florida  
IRB Study # Pro 15901

University of South Florida (USF) International Review Board (IRB)  
Assent to Participate in Research

*Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP)  
Latrines in Zwedru, Liberia*

Liberian Classroom Teacher will provide the following information to all the students.

**Why am I being asked to take part in this research?**

You are being asked to take part in a research study about the school latrines. You are being asked to take part in this research study because you attend J.C. Barlee Elementary of Tubman Wilson Institute (TWI) in Zwedru, Grand Gedeh County. If you take part in this study, you will be one of about 1,000 people at this site.

**Who is doing this study?**

The person in charge of this study is Sarah Ness, the TWI Peace Corps Volunteer.

**What is the purpose of this study?**

By doing this study, we hope to learn when the school latrines are used and what people like about the latrine designs.

**Where is the study going to take place and how long will it last?**

The study will be take place at your school. The surveys will be given on campus during the second semester. There will be three months between the first survey and the second survey.

**What will you be asked to do?**

You will be asked to participate by taking two surveys that will ask questions about the school latrines. Between the surveys, you will participate in a sanitation and health lesson that will be given during your normal school classes.

**What things might happen if you participate?**

To the best of our knowledge, your participation in this study will not harm you.

**Is there benefit to me for participating?**

We cannot promise that you will receive benefit from taking part in this research study. However, by taking part in this study you might learn more about the school latrines and how to help keep them clean and improve your health.

Version 1, 01.13.14, eIRB# 15901

Version 1  
Version Date: 1/13/14  
Ness\_VIP Latrines Study Assent Script\_v1\_01.13.14

**What other choices do I have if I do not participate?**

You have the alternative to choose not to participate in this research study. Your grades will not be affected in any way if you do not participate.

**Do I have to take part in this study?**

You should talk with your parents or guardian and others about taking part in this research study. If you do not want to take part in the study, that is your decision. You should take part in this study because you want to volunteer.

**Will I receive anything for taking part in this study?**

You will not receive anything for taking part in this study.

**Who will see the information about me?**

Your information will be added to the information from other people taking part in the study so no one will know who you are. Also, the surveys will not ask for your name so the information you provide will not be directly connected to you.

**Can I change my mind and quit?**

If you decide to take part in the study, you can stop participating at any time. No one will think badly of you if you decide to stop.

**What if I have questions?**

You can talk with the Peace Corps Volunteer, Sarah Ness, at any time if you have questions about the study. You can also talk to your parents, teachers, or school administration if you have questions.

**Verbal Assent Process**

1. Teacher: Do you want to participate in the study?  
Student Response
2. Teacher: Do you agree to take part in the study?  
Student Response

If the student says "yes" to both questions, this will be taken as their verbal assent to participate.

If the student says "no" to either question, the student will not be included in the study.

Version 1, 01.13.14, eIRB# 15901

## Appendix F. Staff and Student Survey Questions

Version 1

Ness\_VIP Latrines Study Staff Surveys\_v1\_01.13.14

*Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia*

### **Survey for Administration, Faculty, and Staff**

Directions: Please complete the following questions. If options are provided, please circle your answer.

1. What is your gender?  
Male                      Female
2. What is your age?  
20-30 years    31-40 years    41-50 years    51-60 years    61 years or above
3. What is your position at the School?  
Administration    Teacher    Staff
4. Do you use the school latrines?  
Yes                      No
5. If yes, how often do you use the latrines?  
Every day    2-3 times a week    1 time a week    2-3 times a month  
1 time a month    Less than once a month
6. How clean are the school latrines?  
Very Clean    Clean    Dirty    Very Dirty
7. How safe are the school latrines?  
Very Safe    Safe    Not Safe    Very Unsafe
8. How comfortable are the school latrines?  
Very Comfortable    Comfortable    Not Comfortable    Very Uncomfortable
9. Please explain what is beneficial or good about the school latrines?
10. Please describe what is negative or bad about the school latrines?
11. Where do you go to the bathroom at your house? (Private means that just your household uses the facility, shared means that people from more than one household use the facility)  
Outside (Bush)    Private pit latrine    Private VIP latrine  
Private pour-flush commode    Shared pit latrine  
Shared VIP latrine    Shared pour-flush commode  
Other: \_\_\_\_\_
12. Any additional comments regarding the school VIP latrines.

Version 1

Ness\_VIP Latrines Study Student Surveys\_v1\_01.13.14

*Investigation of Design and User Preferences for Communal School Ventilated Improved Pit (VIP) Latrines in Zwedru, Liberia*

Survey for Students

Directions: Please complete the following questions. If options are provided, please circle your answer.

1. What is your gender?  
Male                                  Female
2. What is your age?  
7-11years      12-17 years      18-20 years      21-25 years      26-30 years  
31 years and above
3. What class (grade) are you in? \_\_\_\_\_
4. Do you use the school latrines?  
Yes                                  No
5. If yes, how often do you use the latrines?  
Every day      2-3 times a week      1 time a week      2-3 times a month  
1 time a month      Less than once a month
6. How clean are the school latrines?  
Very Clean      Clean      Dirty      Very Dirty
7. How safe are the school latrines?  
Very Safe      Safe      Not Safe      Very Unsafe
8. How comfortable are the school latrines?  
Very Comfortable      Comfortable      Not Comfortable      Very Uncomfortable
9. Please explain what is beneficial or good about the school latrines?
10. Please describe what is negative or bad about the school latrines?
11. Where do you go to the bathroom at your house? (Private means that just your household uses the facility, shared means that people from more than one household use the facility)  
Outside (Bush)      Private pit latrine      Private VIP latrine  
Private pour-flush commode      Shared pit latrine  
Shared VIP latrine      Shared pour-flush commode  
Other: \_\_\_\_\_
12. Any additional comments regarding the school VIP latrines.

## Appendix G. Survey Data

Question No.	1	2	3	4	5	6	7	8	9	10	11	12
	What is your gender?	What is your age?	What class (grade) are you in?	Do you use the school latrines?	If yes, how often do you use the latrines?	How clean are the school latrines?	How safe are the school latrines?	How comfortable are the school latrines?	Please explain what is beneficial or good about the school latrines.	Please explain what is negative or bad about the school latrines.	Where do you go to the bathroom at your house?	Any additional comments regarding the school VIP latrines. Other: At house
1	Female	21-25 years	12 Yes	Every day	Very Clean	Very Safe	Comfortable		The school latrines are very beneficial to me.	Not bad	Shared pit latrine	
2	Female	21-25 years	12 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable		The good about the school latrines is the latrines is always clean both inside.	Nothing bad about the latrines	Private pit latrine	
3	Female	21-25 years	12 Yes	2-3 times a week	Clean	Safe	Very Comfortable		My school latrines is very good because I not do uncomfortable use.	The negative latrines is bad when can't be in past I was not use to comfortable.	Shared pit latrine	
4	Male	18-20 years	12 Yes	Every day	Dirty	Very Unsafe	Not Comfortable		The beneficial or good about the school latrines is very bad because no care taking about the latrines so the latrines is not in good condition. That all about our school latrines.	The school latrines is so bad of because no control, so the JC Barlee students are spoiling our latrines so bad all the school latrines need read building so that is can be good.	Shared MP latrine	
5	Male	21-25 years	12 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable		The beneficial aspect of the above mention school latrines is it helps the students of the identical institution to put out waste product from body.	The description of the school latrines, the latrines erected for the school in structure is beautiful but lacking of the maintenance aspect or care so as to avoid diseases attraction.	Other	We the students of Tubman Wilson Institute please cordially to appreciate your effort by erating a latrine for our school. Secondly, we are please to say to you as a way forward that resolution solution should be designed so as to maintain the beautiful building or latrines that you have erected for us.
6	Female	21-25 years	12 Yes	1 time a week	Clean	Safe	Comfortable		The latrines is beneficial because some of us are not living near the school campus, or sometime I have running stomach and I will like to come to school, because I know that latrines is on campus.	Some people can leave the toilet hold (hole) and toilet on the floor (floor), and after they clean their anus on the well, or some toilet around the latrines building. That is very bad.	Shared pit latrine	The latrines need to be closed throughout day and night and they need to obtain security keep watch for the latrine so they will know who is toileting on the flow.
7	Female	21-25 years	12 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable		My school latrines is very good because I do not feel uncomfortable on campus.	The negative or bad about my school latrine is many of us student use it.	Shared pit latrine	My school latrine is very clean that why my school is park (packed) with student and other wish to attend the school.
8	Female	21-25 years	12 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable		The latrines is good because even weekend the latrines can be wash. It also help us not to go out of the campus when we want use the latrines.	Nothing bad about the latrines	Private pour-flush commode	
9	Female	26-30 years	12 No	2-3 times a week	Clean	Not Safe	Comfortable		The school pump are beneficial in our school because we use it.	The bad part about the school latrines is because the little children can be pou pou all around the latrines and also the negative.	Shared pit latrine	
10	Female	21-25 years	12 Yes	Every day	Very Clean	Very Safe	Very Comfortable		The good thing that we are beneficial school latrines because we used the latrines every day.	The bad thing about the school latrines because the latrines are not clean.	Private pit latrine	
11	Male	26-30 years	12 Yes	2-3 times a month	Clean	Not Safe	Comfortable		The latrines help the students not to go out of the school campus for defecation.	One negative part is that the community members are using the latrines.	Shared MP latrine	
12	Male	21-25 years	12 Yes	Every day	Very Clean	Very Safe	Very Comfortable		Materials are provided after using the latrines such as soap and water to use.		Private pit latrine	
13	Female	26-30 years	12 Yes	Every day	Very Clean	Very Safe	Very Comfortable		Materials are provided after using the latrines such as soap and water to use.	The school latrines is very good.	Private pit latrine	



14	Female	26-30 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The good thing that we are benefited with is hand wash station, soap, good latrines, and so on.	The school latrines is very good.	Private pit latrine	
15	Female	21-25 years	12	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The latrines is beneficial because we use it when need of it.	It is nothing negative about the school latrines because it is clean.	Private pit latrine	
16	Female	18-20 years	12	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The latrines is very good because it help us when we are in school and doing weekend we also use it for does of us who live around the school campus.	Nothing bad about the school latrines.	Private pour-flush commode	
17	Male	18-20 years	12	Yes	Less than once a month	Clean	Very Unsafe	Very Uncomfortable	The school latrines is not safe at all. So are name the school to put things in place.	The school latrines is look blue and white because the blue and the white.	Outside (Bush)	
18	Male	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	He or she is good in techan so that we the student thar study.		Private pit latrine	
19	Male	18-20 years	10	No	No answer	No answer	No answer	No answer	I don't use the school latrines so for this reason I can not tell how clean or dirty a are. The school latrine is comfortable because it is a good building. The beneficial of the school latrines is that the elementary school is the one that	The negative parts about the school latrines is that the girl of the school is the one that all ways using the school latrines all the time.	Shared pit latrine	
20	Male	18-20 years	10	Yes	2-3 times a week	Very Clean	Not Safe	Very Comfortable	The good or bad about the school latrines are deriver from the administration of the Institution.	The negative or bad about the school latrine are some students use the floor or the wall.	No answer	
21	Male	18-20 years	10	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The good part is students release themselves in the latrines weather good or bad.	The negative aspects about the school latrines is some students use the floor rather than the toilet hold.	Private pit latrine	
22	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very good for we the students.	The school latrines is very clean and safe.	Shared pit latrine	
23	Male	18-20 years	10	No	2-3 times a week	Dirty	Safe	Very Comfortable	The good about the school latrines is the othe good cares.	The latrine is bad because the outside use is latrine contains.	Outside (Bush)	is very dirty because the people who use the latrines
24	Male	18-20 years	10	Yes	1 time a week	Very Clean	Very Unsafe	Very Uncomfortable	The good part is that the school latrines help us to release our self when we in school.	The describe part is that some people use the toilet as they tissue.	Private pit latrine	
25	Male	12-17 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines is good because it save person when she/he have running stomach than they used the latrines.	The latrines is bad it when is very dirty and unsafe.	Outside (Bush)	
26	Male	18-20 years	10	No	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	I don't use the school latrines because the place is very small. The school latrine is not safe because it is very small and they don't take good care of the place.	The school latrines is dirty and the place is small.	Private pit latrine	
27	Male	18-20 years	10	Yes	2-3 times a week	Dirty	Safe	Not Comfortable	The school latrine is beneficial to us because sometime you accrunter running stomach on campus you don have to go out, you can use it.	The latrine is bas because when you used it on (no) water or tissue to use and clean yourself.	Private pit latrine	Yes It is that no one to take care of the latrine so people who not in the Instatution can come in and use it in a bad condition. Thank you for your interview, my name is Morris Wawoe.
28	Female	21-25 years	10	Yes	1 time a month	Very Dirty	Very Unsafe	Not Comfortable	The latrines do no have any water because anytime you use a latrines you need to wash your hand and do not have any of these hand pump, these are the thing we need.	Our latrines is very bad because some of the children that use the latrines, they can not toilet in the hole itself. They can toilet in on the floor, this what our toilet look bad.	Other	Addition comments regarding the school VIP latrines, the school VIP latrines is very clean because no any student or small child can go there to do any thing like pupu
29	Female	21-25 years	10	Yes	1 time a week	Very Dirty	Very Safe	Very Comfortable	The school latrine is very dirty the reason I say that is where you	If you enter in the latrine	No answer	
30	Female	18-20 years	10	Yes	Every day	Dirty	Safe	Comfortable	The good about the school latrines, is the latrines are clean	The bad about the school latrines, is the latrines are not very safe,	Private VIP latrine	

31	Female	21-25 years	10	No	No answer	Dirty	Not Safe	Not Comfortable	The school latrines are unclean because people in the community misused it all the time.	The latrines are misused inside and outside.	Private pit latrine		
32	Male	21-25 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is, the environment is very clean and also inside the latrine is not polluted that is all about the goodness.	The negative or badness of the school latrines are the zinc.	Other	The comment regarding the school or VIP on campus is to clean the surrounding.	Private pit latrine, Private pour-flush commode, Shared pour-flush commode
33	Female	26-30 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The good on the school latrines is very clean and safe.	The negative or bad on the school latrines is that no water for washing hand.	Outside (Bush)		
34	Female	21-25 years	10	No	No answer	Very Clean	Very Unsafe	Very Uncomfortable	The school latrines is very unclean, no wash hand water after using the latrines.	The latrines is very bay, latrines all over, on the floor.	Other		Outside (Bush), Private pit latrine, Shared pour-flush commode
35	Female	21-25 years	10	No	No answer	Dirty	Not Safe	Very Uncomfortable	The good thing about the school is the building of it.	The bad thing about the school latrines is that it can not be clean and the community people us it too.	Private pit latrine		
36	Male	18-20 years	10	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines can help us when we want to pupu or pepe	The negative and bad part of the school latrines is student go in to latrines and pupu all round it.	Private pit latrine		
37	Male	18-20 years	10	Yes	Every day	Clean	Safe	Comfortable	The beneficial or the latrines help us on campus.	The school latrines is not bad but the grass around it is not good.	Outside (Bush)		
38	Male	18-20 years	10	No	No answer	Very Clean	No answer	No answer	The school latrine is for everybody in this campus.	To clean the latrines (2) times a week.	Private pit latrine		
39	Male	18-20 years	10	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial part of the latrines is that after toileting there is a place you go and wish your hand.	The bad part of the latrines, is that some people use the latrines as their tissue, and also use the floor to toilet.	Private pit latrine		
40	Male	21-25 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial or goodness about the school is around very clean and also inside the latrine is not polluted that is all about the goodness.	The negative or badness of the school latrines is the zinc.	Other	The comment regarding the school VIP latrine is to clean the surrounding.	Private pit latrine, Private pour-flush commode, Shared pour-flush commode
41	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines some are good no bye.	The negative or badness about the school latrines some are zinc and good care talk that us, clean the latrine every day.	Other		Private pit latrine, Private pour-flush commode, Shared pour-flush commode
42	Male	18-20 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines help us on campus.	The negative aspect about the school latrines is that no one to take of the tissue that we used.	Outside (Bush)		
43	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is beneficial because it help the students and teachers when they to excrete.	The negative or bad part of the school latrine is the latrine can be open through which other from outside and damage the area.	Private pit latrine		
44	Male	12-17 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines is good because it help us. I also feel good when ever I enter in it.	The bad about the school latrines is no constant cleaning.	Outside (Bush)		
45	Male	18-20 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very good it is not bad.	Some people can pupoo on the floor.	Private pit latrine		
46	Male	21-25 years	10	Yes	Every day	Dirty	Safe	Very Comfortable	The school latrines is very bad.	The school latrines is very bad and also after using the latrine no water.	No answer		
47	answer	18-20 years	10	Yes	1 time a week	Very Dirty	Very Safe	Very Comfortable			Other		Outside (Bush), Private pit latrine
48	Male	18-20 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school is latrine beneficial because it help teachers and students when they excrete.	The negative or bad part of the school latrine is the latrine can be open through which other from outside and damage the area.	Private pour-flush commode		
49	Male	21-25 years	10	Yes	2-3 times a week	Very Dirty	Not Safe	Very Uncomfortable	The beneficial of the school latrines is, when ever you are gaim while in school you can use the latrine to free yourself.	The negative part of the latrines is, it is dirty and very closer to the school classrooms around it are clean.	Private pit latrine		

50 Male	18-20 years	10 Yes	1 time a week	Clean	Safe	Comfortable	The school latrines is looking good.	The negative of the school latrines are some children pupoo on the floor.	Private pit latrine
51 Male	18-20 years	10 No	No answer	Clean	Not Safe	Not Comfortable	The school latrines is beneficial to the student and teacher, but it not pupne clean to be used. It help us to defecate good area.	No water at the latrines to use after usedign it. No tissue	No answer
52 Female	26-30 years	10 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is good because I feel good when ever I enter it and it help people when ever they get runing stomach.	The bad about my school latrines is no constand cleaning.	Private VIP latrine
53 Male	12-17 years	10 Yes	1 time a week	Clean	Safe	Comfortable	The goodness about the school latrines is the building, but inside very, very dirty.	The negative part of the latrines is dirty.	Private pit latrine
54 Male	18-20 years	10 Yes	2-3 times a week	Dirty	Very Unsafe	Very Uncomfortable	The latrines is very dean because they take good care of it.		Private VIP latrine
55 Female	18-20 years	10 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	My school latrines is good because then is water outside worn you hands went you come out.		Private VIP latrine
56 answer	21-25 years	10 No	1 time a week	Clean	Safe	Comfortable	My school latrines is good because there is water outside wash your hands went you come out.		Private VIP latrine
57 answer	26-30 years	10 Yes	1 time a week	Clean	Safe	Comfortable	The good about the school latrines is building, but inside very dirty.	The negative thing is dirty.	Private pit latrine
58 Male	18-20 years	10 Yes	2-3 times a week	Very Dirty	Very Unsafe	Very Uncomfortable	It can't smell and it also get door after visiting the latrine then you lock the door.	It is not plenty according to our population.	Private pit latrine
59 Female	21-25 years	12 Yes	Every day	Clean	Safe	Comfortable	The beneficial of the school latrine it help the student and teachers on campus it is good because some student have running stomach diseases for these who have disease they use the latrine to help themselves.	The negative part of the school latrine is do not allow the latrine to be full bard part about the school latrine is the community people can use the latrine.	Private pit latrine
60 Male	18-20 years	12 Yes	Every day	Clean	Very Safe	Very Comfortable	The beneficial or good is it help some students to put out the waste products on the school campus.	The negative or bad about the school latrines some community people use the latrine they make the latrines dirty, other students can take good care on it.	Private pit latrine
61 Female	21-25 years	12 Yes	1 time a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is to help students.	The negative or bad about the school latrines is very must good because she build the latrine in order to help student. Every week she clean the latrine.	Private pit latrine
62 Male	18-20 years	12 Yes	2-3 times a week	Clean	Safe	Comfortable	My beneficial or good about the school latrines is since we have geneter (janitor) in the school then the latrines can't be dirty she make she that	Our latrines are not too much equal to our population in school.	Private pit latrine
63 Male	18-20 years	12 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines are beneficial to the school because it helped students to release themselves when they want.	The school latrines are very bad and dirty with pollution, bad odor.	Shared pit latrine
64 Male	21-25 years	12 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines is very dean the peace scope lady is taking care of it.	We can dean around the latrines every day; she is trying her best, yes.	No answer
65 Male	18-20 years	12 Yes	1 time a week	Very Clean	Very Safe	Comfortable	The school latrines is beneficial is good because it help the student to use it when they need of it.	The school latrine is very bad and dirty with pollution and older (odor).	Private pour-flush commode
66 Male	21-25 years	12 Yes	2-3 times a month	Very Dirty	Very Unsafe	Very Uncomfortable			

67	Male	21-25 years	12	Yes	2-3 times a week	Very Clean	Very Safe	Comfortable	The school latrines is good because it help student on campus in case of going home for latrine, you strightly goes to the latrine.	Sometime we experience bad oldors from the latrine, and its cause problem to the students on campus.	Shared VIP latrine	I extend my thanks and appreciate for the effort being applied to enable students used the school latrines on campus, instead of going home for latrine. We shortly run to the latrine on campus to please ourselves so we say thanks to you.
68	Male	18-20 years	12	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is beneficial to the students because it help student to attend nature. He or she can quickly run into the latrines and attend nature as he or she wishes.	The negative parts of the school latrines is the dirtyness. The dirty always in by some individual. Another thing is the latrines is very unsafe, it cannot be well taken care of and is very uncomfortable.	Private pour-flush commode	
69	Female	21-25 years	12	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The latrines help the student from going to their houses.		Private pour-flush commode	
70	Male	21-25 years	12	Yes	1 time a week	Clean	Safe	Comfortable	School latrines help study to pass on excess water or wast product.	The negative part of school latrines is that it being bad air.	Other	Private pit latrine, Shared VIP latrine
71	Male	21-25 years	12	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	I can ease myself where I am very germ.	Actually, there is no control and the worst of all the latrine is used as community latrine.	Shared VIP latrine	
72	Female	21-25 years	12	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	I can ease myself where I am very germ.	The latrine is bad because there is no control of it and also the community misused it.	Shared VIP latrine	
73	Male	18-20 years	12	Yes	2-3 times a week	Clean	Not Safe	Not Comfortable	One of the beneficiary aspect of our school latrine is that it enable us to release waste products.	The negative situation our school latrine face with is chemical to kill the makay in the toilet when the toilet is full there an pollution.		More people from outside use our latrine so therefore it is not save for student usage. It is very essential that our school has a VIP latrine that will enable our instructional staff visit if in need; it is important that our school system has latrine to avoid we the students and our staffs using one latrine.
74	Male	18-20 years	12	Yes	2-3 times a week	Very Clean	Not Safe	Not Comfortable	Students beneficial from the latrines because it make students not go away from the school.	The bad about the latrines is pollution is the any things I am seed about it.	Shared pit latrine	People can come from outside to use our latrine, so is not safe sometime for the students to use it. My comment have to do with the school health to take good clean of the latrines. For the outside to stop use it and let it be in a sad condition.
75	Female	26-30 years	12	Yes	1 time a week	Very Clean	Safe	Very Comfortable	The school latrines help the student not to go to the house or to go to people house, for the past 2 years the latrines so much.		Private pour-flush commode	
76	No answer	21-25 years	12	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	What is good about the latrines the school is taking good care of the school latrines.	The children that in the morning school is not keeping the latrines clean.	Outside (Bush)	
77	Male	21-25 years	12	Yes	Every day	Very Clean	Very Safe	Comfortable	The school latrines are very beneficiary to me because it makes me to release myself any time I want to. In the past I was not use to.	If the latrines was having a negative impact, I wouldn't have told you about the latrines been comfortable.	Shared pit latrine	
78	Female	No answer	12	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The beneficial or good about the school latrines is to help the student released themselves on campus not to go home anytime they want to.	The negative side about the school latrines is that the community member are misusing the school latrines for example on the flow (floor).	Shared pit latrine	
79	Female	21-25 years	12	Yes	1 time a week	Clean	Very Safe	Very Comfortable	The beneficial part about the school is that students don't have to leave the campus to release themselves while they have latrines on the campus.	The negative thing is that we don't have generator (janitor) to clean the latrines all the time.	Private pour-flush commode	

80	Female	21-25 years	12	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The beneficial or good about the school latrines is to help the student released themselves on campus not to go home anytime they want to.	The negative side about the school latrines is that the community member are misusing the school latrines for example on the flow (floor).	Private pit latrine		
81	Male	18-20 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines is very comfortable to use because it help us when we come to school. Always school latrines is very good to go in.	For the negative part or bad part about the school latrines is that the school do not have latrines material like soap.	Private pit latrine		
82	Male	21-25 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The good thing about the school latrines is very clean everyday.	For the negative or bad about the school latrine is not have soap and tissue.	Private pit latrine		
83	Male	21-25 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines benefit to me because the place is clean.	The bye part about the school latrines is no soap and tissue.	Private pit latrine		
84	Male	12-17 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is that the school has a pump which is there after using the latrines to wash your hands. It is also good for students to use it because it helps the students to free themselves at any time.	The bad or negative part of the school latrines it is not in good condition in which the latrines doors can be open any time.	Other	Yes, the school VIP latrines need school power flush commode on some other materials that is good for the latrines.	Private VIP latrine, Shared pit latrine
85	Male	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The latrine beneficial us because we can go out to go in latrines.	The negative part about the school latrine	No answer	The VIP latrines is very good there is no contaminant on the VIP latrines	
86	Female	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial is good about the school latrine is good for used.	The negative about the school latrines is do not have soap to wash your hand. We have water to wash your hand.	Private pit latrine	The school VIP latrines is good because await lock and safe.	
87	Male	12-17 years	11	Yes	1 time a week	Clean	Not Safe	Comfortable	The beneficial or good about the school latrines is that the latrine to has a pump which is they after using the latrines to wash your hand it also good for student to used in help the student to themselves at any time.	The bad or negative part or the school latrines it hat in an good atmosphere in which the latrine door can be open.	Private pit latrine		
88	Male	26-30 years	12	Yes	2-3 times a week	Clean	Safe	Comfortable	It always clean and it does not smell, it also have pipe after visiting them to wash your hands.	The latrine building not plenty according to our school population.	Outside (Bush)		
89	Female	18-20 years	12	Yes	2-3 times a week	Very Clean	Not Safe	Not Comfortable	The latrines is very good using.	When the student use the latrines is for protection.	Private pit latrine	Yes, we regard the school VIP latrines.	
90	Male	21-25 years	12	Yes	2-3 times a week	Very Clean	Not Safe	Not Comfortable		When the student latrines is protected therefore is save for the student.	Private pit latrine	Some people from outside to use student latrine therefore it is not save for student. It is good that your school has a latrines. When your school has a latrines it will help to save you.	
91	Female	26-30 years	12	Yes	1 time a week	Clean	Safe	Not Comfortable	The beneficial of the school latrines is very good to me this is why are beneficial for the school.	I describe that every time we clean the school latrines.	No answer		
92	Female	26-30 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The good about the school latrine is the latrine is always clean both inside and outside for the student to use it. Also help them from going out of the school.	The good about the school is the school latrines is the latrine is always clean both inside and outside.	Private pit latrine	No additional or comment about the school VIP latrines because school VIP latrines is restricted.	
93	Male	21-25 years	12	Yes	2-3 times a month	Clean	Safe	Comfortable	The latrines is very good because it help the student in the school.	The bad about the school is because the community member around the school misused the school latrines properly.	Private pit latrine	Well I do not have much to write about the school VIP latrines but I want to make a recommendation I would like if you complete your study, please take trip to Africa, Liberia so you can help our people.	

94	Female	21-25 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	My school latrines is beneficial to we the student because we can use it because it help us we the student.	The bad about the school latrines is the latrines in the center of the city so every body can use it so it can not be clean.	Private pit latrine	I do have much to write about the school VIP latrines but I want to make a recommendation I would like if you complete your study please take trip to Africa Liberia so you can help our people.
95	Male	21-25 years	12	Yes	2-3 times a month	Clean	Safe	Comfortable	What is very good about the school latrines is when ever I want to go to the toilet, I can make a quick used of it.	What is bad many people In the community makes used of it properly, at the result that place became dirty.	Private VIP latrine	I do not have much to write about the school VIP latrines. But I want to make a recommendation. I would like if you complete your study, please take a trip to Liberia so that you can help our people with better knowledge. Thank you very much. God bless you.
96	Male	21-25 years	12	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The good part is the help student to stay on campus. The bad because some people misuse it.	The negative part is that people misuse it.	No answer	
97	Male	21-25 years	12	Yes	2-3 times a month	Clean	Safe	Comfortable	The good thing about my school latrines is that I can go there at any time during school hour.	The school latrines is very close to my class.	Outside (Bush)	
98	Female	26-30 years	12	Yes	1 time a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is after excretion there is a hand washing pump provided to use after latring.	The negative or bad thing about the school latrines is people from outside can go there, if they see lock there they will spoil.	Private pit latrine	Additional comments regarding the school VIP latrines is that the VIP latrines is restricted provided and there is no protectice (protective) covering of the hold (hole).
99	Male	21-25 years	12	Yes	1 time a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is after excretion there is a hand washing pump provided to use after latring.	The negative or bad thing about the school latrines is people from outside can go there, if they see lock there they will spoil.	Private pit latrine	Additional comments regarding the school VIP latrines is that the VIP latrines is restricted. But after excretion there is no tissue provided and there is no protective covering of the hole.
100	Female	18-20 years	12	Yes	2-3 times a week	Very Clean	Safe	Very Comfortable	The school latrines help us to go in the latrines freely no go outside to people and ask the for them latrines.	The school latrines is not bad, everything is very good.	Shared VIP latrine	
101	Male	18-20 years	12	Yes	1 time a week	No answer	No answer	No answer	The beneficial good about the latrines is very good because it help the student not to go faw (far) from the school campus.	The negative or bad the school latrines is not too due, the student are many and the latrines is small.	Private pit latrine	We need to additional is that it is a very important to all environment is hand pump for hand washing after latrines.
102	Female	26-30 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The negative aspect is that some people used the school latrine bad	The people used the latrine bad	No answer	We pleased to used the school latrine.
103	Female	26-30 years	12	Yes	1 time a week	Clean	Safe	Comfortable	The student clean the latrines the clean the latrine everyday.	The student dirty the latrines in the school.	No answer	
104	Female	21-25 years	12	Yes	Every day	Clean	Safe	Comfortable			Private pit latrine	
105	Male	18-20 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The most beneficial or good about this latrine is that it help student to release themselves. The latrine play very important role presently in the school.	The negative part or aspect about the school latrines is that, the hole or the pit is not too much dig so as I am looking or thinking the pit will fill up very sooner.	Private pit latrine	What we need to be added is that, it is a very important to all environment is hand pump for hand washing after latrine.
106	Male	12-17 years	12	Yes	Every day	Clean	No answer	Comfortable	The beneficial or good thin about the school latrines is that, if a student have stomach complain, the latrine in the school is there to help the student release themselves.	The negative or bad thing about the school latrines is that the hole the student sit on is not good.	Outside (Bush)	What we need to be added is that it is important to all environment need to have hand pump for hand washing after latrine.
107	Male	18-20 years	12	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that, the students used the latrines all the time.	The negative or bad part about the school latrines is that, the students are so many and the school latrine rooms are not too many.	Private pour-flush commode	Please try to build more school latrines for the benefit of the students.

108	Male	21-25 years	12	Yes	2-3 times a week	Very Clean	Safe	Comfortable	The school is very good because the teach can be on time.	The bad about the school is to be on the sun and have divotion (devotion).	Shared VIP latrine
109	Male	21-25 years	12	Yes	2-3 times a week	Clean	Safe	Very Comfortable	We used the school latrines is very good for the school.	The negative thing in school latrine is the community used the latrines.	Private pit latrine
110	Female	26-30 years	12	Yes	1 time a week	Very Clean	Very Unsafe	Very Uncomfortable	The good about the school latrines is the latrines is always clean both inside and outside.	The school latrines not have a comfortable door.	Private pit latrine
111	Male	18-20 years	12	Yes	1 time a week	Clean	Safe	Very Comfortable	We use the latrines very good and we feel comfortable in it.	The negative part of the school latrines is they people using the school latrines for outside.	Private pit latrine
112	Male	21-25 years	12	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The students of TWI enjoy the school latrines, that while make the school benefit.	The school latrines is not in good condition.	
113	Male	21-25 years	12	Yes	2-3 times a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is good when there is good care take r to the latrines; latrines should be on campus for the students to use it in case of any runing stomach or diseases.	The school latrines bad when there is no good care taker to take care of the latrines. Every school campus should have a good watch man.	There is comment regarding the school latrines, but deal to the mismanage of the school affairs.
114	Male	26-30 years	12	Yes	2-3 times a week	Dirty	No answer	Comfortable	The school latrines is clean good beneficial will come like some latrines and material.	Some people in community make used the latrines in and out of the surround.	Private VIP latrine
115	Male	26-30 years	12	No answer	2-3 times a month	Very Dirty	Not Safe	Very Uncomfortable	The good part about the school latrines is that the school latrines is very colorful with blue and white.	The school latrines not have a comfortable door.	Private pit latrine
116	Male	26-30 years	12	Yes	1 time a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is after excretion there is a hand washing pump provided to use after latring.	The negative or bad of the school latrines is that the latrines is very dirty.	The additional comments is that the school latrines does not hand washing pump after toiletin we need to wash our hand.
117	Male	21-25 years	12	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable		The negative or bad about the school latrines is that the student can not use the latrines the rightful way.	Some people from outside to use the latrine so for that reason the latrines is that safe. The school does not have a VIP latrines because the teachers can not use the latrines too mush, that what the school does not have a VIP latrines.
118	Male	21-25 years	12	Yes	Every day	Very Clean	Safe	Very Comfortable	Good care taken by the students and the administration, chemical devices place into the latrine kill the waste	The school latrines don't have a negative impact	Shared pit latrine
119	Male	21-25 years	12	Yes	2-3 times a week	Dirty	Safe	Comfortable	The beneficial or good about the school latrines is that it help students to release themselves qualy.	The negative or bad of the school latrines is that the latrines is very dirty.	The additional comments is that, the school latrines does not have hand washing pump, after toiletting we need to wash our hand, so for this, I want to let you to help the school have hand washing pump. Thanks!
120	Female	21-25 years	12	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines is important because when ever you want to use the latrine you will use the school latrine.	School latrine can be bad when it can not be clean or if there is no door and is been use by the community.	Private pit latrine
121	Male	18-20 years	12	No	Every day	Clean	Very Safe	Comfortable	The school latrines is beneficial to us because we use it when we in need of.	The negative or bad thing about the school latrines is because the latrines is not lock, get open door policies.	Shared pit latrine
122	Male	26-30 years	12	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrine is because it is very clean a very safe for human used.	The bad part about the school latrines is if the students fills (falls) to clean the surrounding.	Shared VIP latrine

123	Female	18-20 years	12	Yes	2-3 times a week	Clean	Safe	Very Comfortable	My beneficial or good about the school latrines is since we have geneter (janitor) in the school then the latrines can't be dirty she make she that she cleans it every day.	Our latrines are not too much equal to our population in school.	Private pit latrine	I plite (plead) with you to pls help us add our latrines up.
124	Male	21-25 years	12	Yes	Every day	Clean	Safe	Comfortable	The good/beneficial aspect of our school latrines is that, it help us ease ourself at any time while on campus or during school hour.	The negative thing about the school latrines is that some of the nearby community member sometime used the latrines.	Private pour-flush commode	My comments goes to the administration (T/W) to please construct another modern latrines for our uses.
125	Female	18-20 years	12	Yes	Every day	Very Clean	Very Safe	Comfortable	The good aspect of the school latrines is that it help to put out our waste product during school time.	The negative part of our school latrines is that the kingdmgarden some time don't know how to flush the commode.	Private pour-flush commode	I please that there should be another latrine for the kingdmgarden.
126	Female	12-17 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial good about the school latrines	The school latrines is very good.	Private pit latrine	
127	Male	12-17 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial good about the school latrines is the government pay people to clean the latrines 2 to 3 time a week.	The negative or bad thing about school latrines is the latrines can be open through while others come from outside and go there.	Private pit latrine	
128	Female	21-25 years	10	Yes	1 time a month	Dirty	Not Safe	Not Comfortable	The school latrines is not good for used because it is dirty.	The bathroom is dirty and not good for for satng it is smelling.	Private pit latrine	
129	No answer	21-25 years	10	Yes	1 time a week	Clean	Safe	Comfortable	My school latrines is good because there is water outside to wash your hands when you come out.	The bad of it is some people do not know the use of the latrines, they talet (toilet) all around the latrines.	Private VIP latrine	All school latrines most de in fais and be wall prottal
130	Female	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The latrines is very clean because the take good care of it.		Private VIP latrine	
131	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Not Comfortable	The school beneficial is good about the school latrines.	The school latrines is very clean and safe in the latrines.	Shared pit latrine	
132	Female	21-25 years	10	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	It benefit me any time when I am in school and I want to use the latrine.	The school latrine is not clean, dirty. I sometime smell something bad sometime when I am in school.	Shared VIP latrine	
133	Male	18-20 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines is good because some people live around the campus sometime help to clean the latrines.	The negative of the school latrines are some children can pupoo on the floor.	Private pit latrine	
134	Male	18-20 years	10	No	No answer	Very Dirty	No answer	Very Comfortable	The good about the school latrines are very comfortable.	The negative thing about the school latrines is the latrines are general used I simply saying that people from different communities used the school latrines.	Outside (Bush)	
135	Male	26-30 years	10	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	School latrines can serve the students to not go out of school.	The student can dirty the school latrines all over.	Private pit latrine	
136	Female	26-30 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Uncomfortable	The school latrines in is very good door and unlock.		Private pit latrine	
137	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	No answer	Very Comfortable	School latrines can help student no to go out of the school campus.	The student can dirty the school latrines.	Private pit latrine	
138	Female	21-25 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very in paning four people.	The negative of the school latrines are some children pupoo.	Private pit latrine	
139	Male	18-20 years	10	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines is good because it help us go in toilet when ever we are game.	There is no constant cleaning.	Outside (Bush)	
140	Male	18-20 years	10	No	No answer	Clean	Safe	Comfortable	The latrines is beneficial to the school students and teachers, also for visitor.	The negative part about the latrines is around it is busdhes and the grass is almost over taking it.	Outside (Bush)	
141	Female	18-20 years	10	No	No answer	Clean	Safe	Comfortable	The school beneficial to the student and the teacher		Outside (Bush)	
142	Female	21-25 years	10	No	No answer	Clean	Safe	Comfortable	The latrines is not good be the community people I (are) use it and the school use it.	The negative part about the latrines is clean.	No answer	



143	Female	18-20 years	10	No	No answer	Clean	Safe	Comfortable	The school latrines is clean because we clean it every work day.	Other	Private pit latrine, Shared pit latrine
144	Female	18-20 years	10	No	No answer	Clean	Safe	Comfortable	The school latrines is good because is have good care.	The school negative of latrines is no water to wash our hand	Private VIP latrine
145	Male	21-25 years	10	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is good for some student because they have on (no) latrines at home, so It is very important to them.	The school latrines is very dirty indeed.	Shared VIP latrine I don't have comments about the VIP latrines because It is only for the
146	Male	18-20 years	10	Yes	2-3 times a week	Dirty	Very Unsafe	Not Comfortable	The latrines is good because It help us when we want to urinate or when we want to go in the rest room.	The negative or bad about the school latrines is leaving the pit to tlay (toilet?) on the cement in the round.	Other Private pit latrine, Shared pit latrine
147	Male	12-17 years	10	No	No answer	Dirty	No answer	Not Comfortable	The school latrine are some how good because It help other students on campus to free themselves when ever they want to.	The negative part about the school latrines is that the school latrine is not save for we the students. The latrines is not clean and is dirty for us.	Shared VIP latrine
148	Male	18-20 years	10	No	No answer	Dirty	Not Safe	Not Comfortable	The school latrines are some how good for the users because some people may be force to use it.	The worst thing about the latrines are stink they smell very unpleasant, the latrines are by other from outside.	Private pour-flush commode
149	Male	18-20 years	10	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines need to be builded in a very comfortable way, and It need to be use orderly according to the rules and regulations of latrines.	How people use the latrines is very bad and the way It is build is not very good and nothing to stop the toilets from smelling.	Outside (Bush) The school VIP latrine is not used by the school mainly, It is used by public mainly so It affect we the students
150	Male	18-20 years	10	No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school is very dirty beneficial latrines.	The school is wenter because we I feverure	Shared VIP latrine
151	Male	21-25 years	10	No	No answer	Clean	Safe	Comfortable	I think the school latrines have to be restricted, properly clean regular cleaning with be good.	When the school latrine is not restricted, properly clean, any other person from outside of school can use it, and It is very bad.	Other Yes, I think the school latrines should be In fans (fence) and be locked at all time, and should be restricted by the school administration. Outside bathroom
152	Female	21-25 years	10	Yes	1 time a week	Very Dirty	Very Unsafe	Not Comfortable	The school latrine is very dirty the reason I say that is when you enter In the latrine you can feel bad about your self.	If you enter In the latrines, you can see toilet all around It.	No answer
153	Male	26-30 years	10	No	Less than once a month	Dirty	Not Safe	Not Comfortable	I think the school latrines be good care for the students		Other In bathroom
154	Female	21-25 years	10	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The good about the school latrines is that the girls have their room and boys have their room and our teachers have their own room.	The bad about the school latrines is, that after using the latrines, there is no soap and water to wash our hand and It had no control	Private pit latrine
155	Male	21-25 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	It help use to defecate In a very clean area.	The negative comments of the school latrines, It is near the school building and so its inforts the students some time.	Private VIP latrine
156	Female	18-20 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines are good to use because we clean everyday and after we use the latrines we have water outside of the latrines to wash our hands.	The negative or bad about the school latrines some people use the latrines and life (leave) It dirty the latrines are very dirty because no co care, It is note safe for use.	No answer
157	Female	18-20 years	10	No	No answer	Very Dirty	Very Safe	Not Comfortable	The school latrines good because sometime you may not have long time to run to your house to release yourself so It is good for us.	The negative part of the school latrines is all about the litter (litle) children mass, using the latrines is sometime is bad for our save or life/health.	No answer My comment regarding the school VIP latrines is I will first say to the provide that the latrine is not good but the school VIP latrine to my believe so I saying this to you.

158	Female	18-20 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines help us to free ourself any time we want to pupu.	School latrine pour because any time we come from the latrine we can wash our hand. Provide (prevent) our from disease.	No answer	
159	Male	18-20 years	10	Yes	2-3 times a week	Very Clean	Safe	Very Comfortable	The school is good because the teacher can be in class on time and the school is in fine.		No answer	
160	Male	18-20 years	10	No	No answer	Dirty	Not Safe	Not Comfortable	The school latrines important because it help when someone stomach is hiding them.	The school latrines is bad when it begin to smell and when on (no) good care about it.	Private VIP latrine	The VIP latrines is important because is smel good and so good care is taking it wash every day.
161	Male	21-25 years	10	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very dirty because people from all over the communities go to the latrines so it public latrines.	The school latrines is very bad and dirty some time we go outside to other people latrine they can talk to us before giving us their keys.	Private VIP latrine	
162	Male	12-17 years	10	Yes	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines help us because as anytime you can go in they latrines.	The school latrines is not save because the school is not flys good.	Private pit latrine	
163	Male	18-20 years	10	No	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is not clean and very dirty in the day.		Private VIP latrine	
164	Male	18-20 years	10	Yes	Every day	Dirty	Not Safe	Not Comfortable	The school latrines is not safe because the community member are using it.	The negative about the school latrines is used by community member.	No answer	
165	Female	18-20 years	10	No	No answer	Dirty	Not Safe	Not Comfortable	The good thing about the latrines is sometimes it is clean.	The negative or bad thing about the latrines is because it is dirty and its not safe for us.	Private pit latrine	
166	Male	21-25 years	10	Yes	2-3 times a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not even good at all because of the talay (toilet) that all over.	The school latrines is bad because the talay (toilet) all over on the floor, even the talay at the entrance.	Private pit latrine	
167	Male	12-17 years	10	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	Actually the school latrines is very, very bad and dirty. I usually go out to different people latrines.	very bad and dirty, not save	Private pour-flush commode	
168	Male	18-20 years	10	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school is very safe because we have it in fince (fence), every working day we make it clean by trimming the grass.		Private pit latrine	
169	Male	18-20 years	10	No	No answer	Very Dirty	Very Safe	Not Comfortable	The school latrines is made in order to help student to put out their waste product.	Our latrines is very safe, but very dirty.	Private pit latrine	My comment regarding to this VIP latrine, is I will first say sorry to the provider of this study for what ever he/she may head from this form all we need is development.
170	Male	21-25 years	10	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines good for the public and also the community member and other people.	The latrines is not safe because the school is not in fan (fence) and the latrines is not use by study but community member, so no care	Shared pit latrine	
171	Female	18-20 years	10	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The school latrines is good because it help me want to latrines I go there to used it.	Sometime the school latrines can be bad because we and the children can use it.	Private VIP latrine	
172	Male	21-25 years	10	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial about the school latrines is very stinke and also have bad disease.	School latrines is unuseful.	Other	Private pit latrine, Shared pit latrine
173	answer	No answer	10	Yes	Every day	Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very good to us is make us to be free in body.	The school latrines is very bad because no water to whish (wash) you hand.	No answer	
174	Female	26-30 years	10	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines good because a have good care.	The school negative of the latrines is no water in the latrines room to wash our hands.	Other	VIP latrine
175	Female	18-20 years	10	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The school latrines help me any time I want to use it.	Sometime the school latrine look bad because the children also use it.	Other	Private pit latrine, Private pou-flush commode

176	Female	18-20 years	10	Yes	1 time a week	Very Dirty	Safe	Not Comfortable	The school latrines helps us if any time we want to go in the latrines.	If you go use the latrines you will see that the latrines can be very bad.	Private pit latrine	My comments regarding to my school VIP latrines is always the latrines must be clean.
177	No answer	No answer	10	No answer	1 time a week	Very Clean	Safe	Comfortable	The school latrines is very clean and comfortable to use it.	The bad thing about the school latrines is no water for hand washing.	Other	Private pit latrine, Shared pit latrine
178	Male	21-25 years	10	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial of the latrines is that the school have lock to the door of the latrine.	Nothing is negative or bad about my school latrines.	Private pit latrine	
179	Male	18-20 years	10	Yes	1 time a week	Clean	Safe	Comfortable	The school latrines help me any time I want to use it.	What is bad about the school latrines is that I dislike bush to grow around it.	Private VIP latrine	The school VIP latrines are very good.
180	Male	12-17 years	7	Yes	2-3 times a week	Very Clean	Very Safe	No answer	The good or beneficial about the school latrines is that I feel good when I enter the latrines to feel myself. It is good.	The school latrines has not bad condition about it.	Private pit latrine	There is no any comment about it.
181	Female	12-17 years	7	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	Is good to me I go there to freely myself	the negative because a can smell	Private pit latrine	The VIP latrines is very beautiful and clean
182	Female	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school is very bad because no good lesson.	The school is bad because no explained	Other	Yes, no good lesson, no good flag puppev. Bush, Shared VIP latrine
183	Male	21-25 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The good and beneficial latrine bless as when we want to latrine we can go to our home, but now we have our latrine in school.	Our school latrine have everything. When we come from latrine, wash our hand with shop (soap) and water.	Other	Bush, School VIP Latrine
184	Female	18-20 years	7	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable			Outside (Bush)	
185	Female	18-20 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	Is very good.	Is very clean.	Private pit latrine	the VIP latrine is very good.
186	Female	18-20 years	7	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	Is good to me I go to freely myself their	the negative because is can smell	Private pit latrine	
187	Male	18-20 years	7	Yes	Every day	Very Clean	Not Safe	Not Comfortable	The school is very bad because no good lesson.	The school is bad because are {} can't get more understanding.	Private VIP latrine	
188	Male	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	School latrines is good because if you I (are) student use to go in latrines everyday.	School latrines is good to be on the campus but we should please try to clean our latrines.	Other	I love VIP latrines because it come we by same people in the household. Private pit latrine, Shared VIP latrine
189	Male	18-20 years	7	No	No answer	Clean	Safe	Comfortable	very good	yes, very negative	No answer	
190	Female	18-20 years	7	Yes	2-3 times a week	Clean	Very Safe	Comfortable	The school is very clean.	The school latrine has the color blue and white.	Private pit latrine	
191	Female	18-20 years	7	Yes	1 time a month	Dirty	Not Safe	Not Comfortable	The school latrines is not good because people come from outside to your in the latrines so that I suggest	The school latrines is not good because people come from outside your in the latrines	Private pit latrine	The VIP latrine very good to me.
192	Male	12-17 years	7	Yes	Every day	Clean	Very Safe	Comfortable	The latrines is good clean comfortable it is good for using.		Private pit latrine	The school VIP is clean and safe every staff used the latrines on the campus.
193	Male	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	Our school latrines is very good and clean.	The school latrines is always clean.	No answer	
194	Male	7-11 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	Beneficial or good about the school latrines school have very good care and etc.	My negative or bad about the school latrines is that are with good care of it and etc.	No answer	
195	Male	12-17 years	7	Yes	2-3 times a week	Clean	Safe	Comfortable	The latrines is clean, safe, comfortable it is very good for using.		Private pit latrine	
196	Male	7-11 years	7	Yes	Every day	Clean	Safe	Very Comfortable	The school latrines is very safe and good to use.		Private pit latrine	The comment of VIP latrines is clean and safe.
197	No answer	No answer	7	No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not beneficial because it is not safe.		Private pit latrine	
198	Male	12-17 years	7	Yes	Every day	Very Clean	Safe	Very Comfortable	The school latrine is very good when you using it and also it smell very good.	The school latrines is sometime bad when the children use it and it can be very nice and very comfortable.	Private pit latrine	
199	Male	21-25 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	because the school latrines is very good and clean	nothing is bad from the latrines	Private VIP latrine	yes
200	Male	7-11 years	7	Yes	Every day	Very Clean	Safe	Very Comfortable	I benefit from the latrines because when ever I enter there I feel very comfortable. It is clean and safe.	I don't have no negative part or bad felling about it.	Private pit latrine	Comments: The school VIP latrines is good. We joyfully go in everyday. We can feel good when ever we enter the latrine it is very clean and safe.

201	Male	12-17 years	7	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines beneficial me went (when) I in school.	Sometime the school latrines is dirty	Private pour-flush commode	yes	
202	Male	12-17 years	7	No	No answer	Very Clean	Very Safe	Very Comfortable	The latrines look very good and safe for using.	Our school latrine is polluted	Other	The reason for which I don use the latrines of the is the people say sickness is coming so I was afred (afraid) to used it.	
203	Male	12-17 years	7	No	No answer	Very Clean	Not Safe	Not Comfortable			No answer		
204	Male	12-17 years	7	Yes	Every day	Clean	Safe	Comfortable	The school is good because It help us to learn.	The student they can go home before the time.		No answer	
205	Female	12-17 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines are very bad they do not have tuses (tissue) insid can be dirty	We do not have safe latrines for each time are (I) go in the latrines are (I) see pupu all inside the latrines		No answer	
206	Male	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	Our school latrines is very good and dean.	The school latrines is always dean.	Other	Private VIP latrine, Shared VIP latrine	
207	Male	18-20 years	7	Yes	Every day	Dirty	Not Safe	Not Comfortable	The school latrines are not beneficial because everybody use TWI campus for latrines.	Inside the latrines is bad. Some people use the pouch (pordh) to pupu. Inside and outside bad.		Private VIP latrine	
208	Female	18-20 years	7	Yes	1 time a week	Very Clean	Safe	Comfortable	The school latrines is not by and secondly the latrines sometime we need to wasking (washing) the latrines.	Sometime latrines be beneficial and good. The latrine can be very good		Shared pit latrine	The VIP latrines is good.
209	Female	18-20 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is clean.			Private pit latrine	
210	Male	12-17 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	It is very good because it help us on campus.	The bad thing about the latrines is this no tissue.		No answer	It is very good because it helping us on campus.
211	No answer	18-20 years	7	No	1 time a week	Dirty	Not Safe	Not Comfortable	I went for the teacher to put people together to dean the latrines. Because dean evernment (environment) brean theatwife.	The school latrines some bad, some dean		Private pit latrine	
212	Female	18-20 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very good.			Private pit latrine	The VIP latrine is good.
213	Female	18-20 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school is very dean in Aferca.	The school latrines is good.		Private pit latrine	The latrines in Aferca is very good.
214	Male	12-17 years	7	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is very bad because if you go inside it you with see toilet on the floor.	Because toilet allways on the floor	Other	Private pit latrine, Shared pour-flush commode	
215	Female	21-25 years	7	Yes	1 time a month	Dirty	Not Safe	Very Comfortable	The school latrines is very dirty.	The school latrines blue? It is dirty.		Outside (Bush)	
216	Male	12-17 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The latrine is very good because went there is no latrine it will be very bad.	The bad part about the latrines is that after using the latrines there is no tissue		No answer	
217	Female	18-20 years	7	Yes	1 time a month	Very Dirty	Not Safe	Not Comfortable	The beneficial it I one to go there and free my self.	The school latrines is not good because people come from outside to uouir in the latrines so that I suggest.		Private pit latrine	The VIP latrines is very good to me.
218	Female	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The latrines is very dean.			Private pit latrine	The VIP latrines is good.
219	Female	18-20 years	7	Yes	Every day	Very Clean	Very Unsafe	Very Comfortable	The school very dean			Private pit latrine	
220	Female	12-17 years	7	Yes	1 time a week	Dirty	Very Unsafe	Very Uncomfortable	is good to me I go to free my self	the negative about it is can smell	Other	The VIP latrines is very beatful and dean	Private pit latrine, Private VIP latrine
221	Male	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	School latrines is good because it you I (are) student you use to go in a latrines every day.	School latrines is good to be on the campus bu we should please try to dean out latrines.		Shared VIP latrine	I love VIP latrines because it can use by same people in the household.
222	Male	21-25 years	7	Yes	1 time a week	Dirty	Safe	Not Comfortable	The school latrines has now pupu gent no good setting (sitting) place	Because the latrines dean no water to wash our hand		Private VIP latrine	
223	Female	18-20 years	7	No answer	1 time a week	Very Dirty	Safe	Very Comfortable	the latrines is very good	In the latrines we use tultde (tissue?) and soap with water		Private pit latrine	In the VIP latrines is good
224	Male	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable		outside of the school latrines is dean. The school latrines inside part is bad.		Private pit latrine	
225	Female	18-20 years	7	Yes	2-3 times a month	Very Clean	Very Safe	Very Comfortable	In the latrines we have soup (soap) to watch (wash) our hand wirh water.	Our school latrines is very good and have mean things to us in the latrines.		Private pit latrine	The VIP latrines is very good.
226	Female	18-20 years	7	Yes	1 time a month	Very Clean	Safe	Very Comfortable	the school latrines is very good	the school latrines is good because I have water, soap, and door		Private pit latrine	The VIP latrines is very dean and good

227	Female	18-20 years	7	Yes	1 time a week	No answer	Very Safe	Very Comfortable	the school latrines is very good because it have door, soap, water, and etc.	The school latrines is not bad, it is very good.	Private pit latrine	The VIP latrines is very good.
228	Male	12-17 years	7	Yes	2-3 times a week	Very Clean	Safe	Very Comfortable	the school latrines is very good	In the latrines we use toilet (tissue?) and soap with water	Private pit latrine	The VIP latrines is very good and clean.
229	Female	18-20 years	7	Yes	1 time a week	Very Dirty	Safe	Very Comfortable	the latrines is very good	In the latrines we use toilet (tissue?) and soap with water	Private pit latrine	In the VIP latrines is very find (fine)
230	Female	12-17 years	7	Yes	1 time a week	Very Clean	Safe	Very Comfortable	The school latrines is very good and nice.	the latrines is safe good and clean	Private pit latrine	The VIP latrine is very clean and good.
231	Female	18-20 years	7	No	No answer	Very Clean	Very Safe	Comfortable	The school latrines is good.	the latrines is good	Private pit latrine	The VIP latrines is good.
232	Female	18-20 years	7	Yes	Every day	Very Clean	Very Safe	Very Comfortable	my school latrines is very clean, my school latrines is very safe.		No answer	
233	Male	12-17 years	7	Yes	2-3 times a month	Very Clean	Very Safe	Very Comfortable	The school latrines is good because it help us when we are about to used it or latrines.	Some time it is bad because some student used the poche (porch) to pupu or latrines.	Private VIP latrine	
234	Male	18-20 years	7	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is not safe because it is full in pupu.	The school latrines bad because of pupu is too much in it.	Private pit latrine	
235	Male	18-20 years	7	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The good about the latrine is we use it some time.	The negative is the school latrines is not good because the seat is full with toilet.	Outside (Bush)	
236	Female	18-20 years	7	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines can be clean every day but there is no tesh (tissue?), so please we asking the Ministry of Health to use wthit.		No answer	
237	Male	18-20 years	7	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The good of the school latrines is because we can clean grass around it.	The school latrines is very bad because the school official do not take good care of the latrines.	Private pit latrine	
238	Female	12-17 years	7	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean.	Our school latrines is always clean.	Outside (Bush)	Our VIP bathroom is always clean.
239	Male	18-20 years	7	Yes	2-3 times a month	Very Clean	Very Safe	Very Comfortable	Our school latrines is very clean every day.	Our school latrines is always clean.	Outside (Bush)	Our VIP bathroom is always clean.
240	Male	12-17 years	7	No	No answer	Very Dirty	Very Unsafe	Very Comfortable		Outside of the school latrines is clean, inside the school latrines is very dirty.	Private pit latrine	
241	Male	21-25 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines is good and safe to be use.	Every things concerning (considering) our school latrines is good. Nothing is bad to discribes (describe).	Shared pit latrine	
242	Male	18-20 years	8	No	No answer	Clean	Safe	Comfortable	It is very good that every learning institution should have a latrine, it helps the students of that institution to releast (release) themselves, it even help some guests and government official as well	The native aspect of the school latrine, is that it is not very clean and also not in a good and comfortable place	No answer	
243	Male	21-25 years	8	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	the school latrines is very clean	the school latrines are very positive	Private VIP latrine	additional your please change all the latrines next year, which is 2015
244	Female	12-17 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	No beneficial or good about the school latrines, the school latrines is very bad and dirty	the negative or bad about the school latrines is the school latrines is look very uncomfortable and very dirty	Shared pit latrine	VIP latrine is very bad
245	Male	12-17 years	8	No	1 time a week	Very Dirty	Not Safe	Very Uncomfortable	The beneficial is that the school latrines is very dirty, and bad that no one can use it.	Negative or bad about the school latrines is the latrines is very bad for student, to use it.	Shared pit latrine	The school VIP latrines is very uncomfortable to use.
246	Male	12-17 years	8	No	1 time a week	Very Dirty	Not Safe	Not Comfortable	The beneficial of the school is not good its bad.	The school latrines is very bad for students.	Shared pit latrine	The school VIP latrines is very uncomfortable.
247	Female	12-17 years	8	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The beneficial of the school latrines can some time help us when we really want to use it.	The school latrines is not safe because the gate is open and outsider use the latrines.	Private VIP latrine	
248	Female	18-20 years	8	No	Every day	Very Dirty	Not Safe	Not Comfortable	The beneficial of the school latrines is very bad.	The school latrines is very bad.	Shared pit latrine	The VIP latrines is very bad.

249	Female	12-17 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial of this school latrines is looking very uncomfortable.	The negative or bad about the school latrines is very bad and dirty.	Shared pit latrine	The VIP latrines is very very bad.
250	Female	18-20 years	8	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines I use the latrines I was very sick.	The school latrines is very bad.	Shared pit latrine	The VIP latrines is very dirty.
251	Male	18-20 years	8	Yes	2-3 times a week	Clean	Safe	Not Comfortable	The good about the school latrines is on time for using.	The negative about the school latrines is can not be prepared every day.	Private pit latrine	
252	Female	18-20 years	8	Yes	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrine is very bad.	The school latrines is very bad because inside is very bad.	Shared pit latrine	The VIP latrines is very dirty.
253	Male	12-17 years	8	No	1 time a week	Very Dirty	Not Safe	Not Comfortable	I used the school latrines 1 time a week and the beneficial of the school latrines is very dirty.	The school latrine is very bad to the school because inside is dirty.	Shared pit latrine	School VIP latrines is very uncomfortable.
254	Male	18-20 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines is comfortable because the school latrines is very clean in Liberia.	The school latrines bad because 1. no lock on door	Shared pit latrine	The VIP latrines is not good because a very bad everybody dirty it so we not have good VIP room in Liberia.
255	Male	18-20 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	Beneficial good about the school latrines help us but it's very bad.	The latrines is small very bad.	Private pit latrine	No comment the school VIP latrines is saved
256	Male	18-20 years	8	No	No answer	Very Clean	Very Safe	Very Comfortable	My school latrines is very clean and very comfortable that what I love on the school.	The school latrines very good and clean.	Private VIP latrine	We are appealing to you that you people should please reconstruct our VIP latrines.
257	Male	12-17 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Not Comfortable	The beneficial of school latrines is it help us to released (release) our self.		Other	Outside (Bush), Private pit latrine
258	Female	18-20 years	8	No	1 time a week	Very Dirty	Not Safe	Not Comfortable	The please (place) is dirty.	The negative or ben able the lain is not clean.	Outside (Bush)	School Pit/tra
259	Male	12-17 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	Beneficial good about the school latrines help us but it's very dirty.	The latrines smell very bad.	Private pit latrine	No comment the school VIP latrines is saved
260	Male	18-20 years	8	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	We benefit from the latrines because the latrines some times help us when we went to poopoo.	The negative or bad about the latrines is that the latrines is not totally save the latrines smell very bad, also zinc is old.	Outside (Bush)	No comment the school VIP latrines is saved
261	Male	18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very dirty and very uncomfortable.	The school latrines is very pollute and also so so poopoo all around the latrines.	Outside (Bush)	We are appealing to you that you people should please reconstruct our VIP latrines.
262	Male	12-17 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very uncomfortable.	The school latrines inside I very bad and it not good for us and so so pupu all around it.	Outside (Bush)	We are appealing to you that you people should please reconstruct our VIP latrines.
263	Male	21-25 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines are very clean.		Private VIP latrine	additional your please change all the latrines next year, which is 2015
264	Male	21-25 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines very dirty, because the elementary poopoo around it that is why we can't use it	poopoo	Outside (Bush)	We are appealing to you that you people should please reconstruct our VIP latrines.
265	Female	18-20 years	8	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean.	The school is are positive.	Private VIP latrine	Additional you please change all the latrines next year
266	Female	12-17 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The only beneficial is that the school latrines is pint well.	The school latrines is bad and can make you sick, and sometime you can develop disease from it.	Private pit latrine	My comments is regarding to the school and the government to please try to make our latrines very clean and save for the students.
267	Male	12-17 years	8	Yes	2-3 times a month	Very Dirty	Not Safe	Very Uncomfortable		No good care taking, around the latrines is very dirty some students misused the latrines.	Shared pit latrine	
268	Male	18-20 years	8	No	No answer	Clean	Safe	Comfortable	The beneficial or good about this is that its help some students who running stomach and etc.	The negative or bad about the school latrines is that there is no lock on the door that is the bad side.	Private pit latrine	
269	Male	18-20 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines are some time you go in the you ham some pupu parpur in the it is not fam.	Our school latrines is very dirty and it is need to be describe.	Other	Outside (Bush), Private pit latrine, Private VIP latrine
270	Male	18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable			No answer	

271	Male	21-25 years	8	Yes	2-3 times a week	Clean	Safe	Comfortable	The beneficial or good school latrines is to be free and safe, second its help student to her (toilet) to be safe, shalln from their friends	The negative is that no key and lock to the door and bad is no plut on baker in therefor using paper	Shared VIP latrine	yes, safe
272	Female	18-20 years	8	Yes	No answer	Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very dirty for us to use it.	The school is very dirty because after using the latrines we done (don't) have such as soap, towel, and sponch.	Outside (Bush)	The school VIP latrines is very bad so you have to select someone who will take care of the VIP latrines.
273	Female	12-17 years	8	No	No answer	Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very bad fr is not beneficial for our health.	The school latrines is very dirty.	Shared pit latrine	The school latrines is not good at all it need to be clean so that we can't be sick.
274	Male	18-20 years	8	No	No answer	Clean	Safe	Very Comfortable	Our school latrines is clean around but the inside part is very bad.	Yes, my school latrines is good but the inside is very bad.	No answer	Yes, this latrines is addition comment regarding by the school ar torative (authority?)
275	Male	18-20 years	8	No	No answer	Very Clean	Very Safe	Comfortable	The beneficial about school latrines is very good and clean.	The school latrines is very good because we used it.	Shared pit latrine	
276	Male	18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not beneficial because it is very uncomfortable for me, that is the reason.	The school latrines is very bad, because it is not clean of me, that is the reason.	Outside (Bush)	What I just want to say, is that the school VIP latrine should be very clean for good health. If not them I don't think that we will get good health, but if a clean, them we will get good health.
277	Male	18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not beneficial because it is very uncomfortable and other people from outside use the latrines.	The school latrines is very bad because people use the school latrines from out.	Private pit latrine	What I want to say, it that I want the school VIP latrines to be very clean and let us have good health area.
278	Male	12-17 years	8	No	No answer	Very Clean	Very Safe	Very Comfortable	The beneficial about the school latrines is very good, so we used it.	The school latrine is very clean for us.	Shared pit latrine	yes
279	Female	18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	It is good because if you are grin (going) in school you use it.	The latrines is also way dirty, because all the community people use it.	Outside (Bush)	The school VIP latrines is bad.
280	Male	18-20 years	8	No	No answer	Very Clean	Safe	Not Comfortable	The beneficial about the school latrines is that we can clean it everyday.	The school latrines is good because every day we the student can clean it.	Shared pit latrine	
281	Female	21-25 years	8	No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable			No answer	
282	Female	21-25 years	8	No	No answer	Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not beneficial because it is very uncomfortable for me that is the reason.	The school latrines is very bad because it is not clean to me that is the reason.	Outside (Bush)	What I just want to say about the VIP latrines should clean because if the latrine is not clean we will not get good health.
283	Female	26-30 years	8	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is because a have cement in it.	The school latrines on the cement is nasty on the seat (seat) is nasty too.	Private pit latrine	The VIP latrines is very dirty.
284	Male	12-17 years	8	No	No answer	Very Dirty	Not Safe	Not Comfortable	It is good and it help us to use it at a period of time.	It is bad because in and around the environment	Outside (Bush)	The comment that we have partneing about the school VIP latrines is very bad.
285	Female	12-17 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	It is good and help us to use at a period of baad	It is good and bad.	Shared pit latrine	VIP is very good.
286	Male	18-20 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school toilet sometime help us because it is here with us, if you want to toilet you are not force but you compare. It is not safe at all.	The bad things about toilet is no good aere, the toilet is very dirty.	Private pit latrine	The additional regarding for the school VIP latrines, we need protection, such as good care, for school toilet to be clean.
287	Male	12-17 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrine is not well protected and it is not clean because any body can use it.	The school latrines is look very bad and it also smelling that is the negative I have about the school latrine.	Private VIP latrine	Yes because the school latrine is not protected so any additional VIP can use it.
288	Female	12-17 years	8	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very bad and not safe to be used.	The school latrines is look very bad and it also smelling that is beneficial I have about the school latrines.	Private VIP latrine	Yes because the school latrine is not protected so any additional VIP can use it.
289	Male	21-25 years	8	Yes	2-3 times a week	Very Dirty	Very Safe	Comfortable	The school toilet same time help us because it is here with us when you want to toilet you and not force but you can.	Bad thing about the our school latrines is no good care, so it is very bad.	Private pit latrine	

290	Female	No answer	18-20 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school toilet sometime help us because it is here with us so u went to toilet but you not force but bay	Private pit latrine	
291	Female		18-20 years	8	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial of the school latrines is the zinc over the latrines.	Private pour-flush commode	My additional comments regarding to the school principle and the government to please help us to clean our latrines.
292	Female		18-20 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	I need your help for your latrines because any time latrines can come to you, so a not good to keep latrines on you.	Shared pit latrine	
293	Female	No answer	18-20 years	8	No answer	1 time a week	No answer	Very Unsafe	Very Uncomfortable	The school latrines is very bad so please try to help our school.	No answer	We want for the government to, please try her possible baggr to help our school.
294	Female		18-20 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	I need your help for you latrines because any time latrines can come to you so a not good to keep latrines on your.	No answer	
295	Female		18-20 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school toilet sometime help us because it is here with us you want to toilet so you are not force but you	Private pit latrine	
296	Female		12-17 years	8	Yes	1 time a week	Very Dirty	Very Safe	Not Comfortable	The school latrines is very dirty.	No answer	
297	Female		12-17 years	8	No	1 time a week	Very Dirty	Not Safe	Not Comfortable	The beneficial or good about the school latrines is - It has paint and it help us to releases ourself.	Outside (Bush)	
298	Male		21-25 years	8	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines is very good, because it help us, when ever we want go in the latrines.	Shared VIP latrine	
299	Female		21-25 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable		Shared pit latrine	
300	Male		21-25 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrine is not bad, but we have to work on it because around the latrines is bush.	Shared pit latrine	VIP latrines is the latrine that in good condition.
301	Male		18-20 years	8	Yes	2-3 times a week	Clean	Not Safe	Very Uncomfortable	The morning student are making the latrines to be dirty, they can leave the hold (hole) and toilet on flow (floor)	Other	In this school, the VIP latrines is at least better than the student latrines, because some student are not united, leaven the hold (hole) and shifting on the flow (floor) is very, very bad, so this is my comment that I have to say, concerning the latrines issue. Thank you very much.
302	Male		18-20 years	8	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The good I knew about the school latrines is that the security guide and protect it.	Private VIP latrine	
303	Male		26-30 years	8	Yes	2-3 times a month	Clean	Safe	Very Comfortable	The school latrines is very good children used the latrines outsd people	Shared pit latrine	
304	Male		12-17 years	8	Yes	2-3 times a month	Clean	Safe	Very Comfortable	The school latrines is very good and outside people, children used the latrines	Private pit latrine	
305	Male		18-20 years	8	Yes	Every day	Very Clean	Very Safe	Very Comfortable	I like to go in the school latrine because is very comfortable with me and when is clean than is very good to us.	Shared pit latrine	My reason for which I did not like to used the VIP latrines is that when other people used it badly and when is very bad than your surrounding not looking healthy.
306	Male		18-20 years	8	No	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines not comfortable reason been all the community people used it more them (than) the students	Shared pit latrine	



307	Female	18-20 years	8	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The good thing about the school latrines is that it keeps clean all the time.	The bad thing about the school latrines is that people toilet around the school latrines.	Private VIP latrine		
308	Male	No answer	8	No	No answer	No answer	Very Unsafe	Not Comfortable		The latrines that in the school very	No answer		
309	Female	21-25 years	8	No	No answer	Very Dirty	Not Safe	No answer	The school latrines is not good for us, so we can use it.	The school latrines is very bay, because it is not clean for me, that is the reason.	Outside (Bush)	The school VIP latrines is not good, so I want you people to help and give good latrines.	
310	Female	26-30 years	8	Yes	2-3 times a week	Very Dirty	Not Safe	Very Uncomfortable	The beneficial is to clean the latrines.	The negative or bad is the children are latrining on the ground.	No answer		
311	Male	12-17 years	8	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines is very good to release yourself because all student need to release themselves. The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	The latrines is very dirty that is not good for human health.	Private pit latrine	Yes, the VIP latrines is very desence (decent) and very clean. It provide good health in the community.	
312	Female	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	The negative part about the school latrines is that it lack soap and tissue.	Other	The school VIP latrine is very good and safe, there is no comment about the school VIP latrine.	Private pit latrine, Shared pit latrine
313	Female	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is because when we are in school the school latrines help us.	The negative part about the school latrines is lack of soap and tissue.	Other	There is no comment about the school VIP latrines because its away look and safe for VIP use.	Private pit latrine, Shared pit latrine
314	Female	21-25 years	11	Yes	No answer	Very Clean	No answer	Very Comfortable	The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	The negative part about the school latrines is lack of soap and tissue.	Private pit latrine	The school VIP latrine is very good and safe, there is no comment about the school VIP latrine.	
315	Male	18-20 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The good thing about the school latrines is clean everyday and I go there to free myself good.	The bad thing about the school latrines is that people there everyday.	Shared pour-flush commode		
316	Male	21-25 years	11	Yes	1 time a month	Dirty	Not Safe	Not Comfortable	What is good about our latrines is that a school should have latrines and we use it some time.	What is bad about our school latrines is no commode, no where to wash hands, no tissue to use.	Private pour-flush commode	The school need more latrines and someone to take good care of it.	
317	Female	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	There is no water, no tissue and soap.	Other	The school VIP latrine is very good and safe, there is no comment about the school VIP latrine.	Private pit latrine, shared pit latrine
318	Female	18-20 years	11	Yes	2-3 times a week	Clean	Very Safe	Comfortable	The beneficial of the latrines or good is control by the health worker in the school, so it is good to be use.	The negative or bad about the latrines is, if someone go there, they can pepe all over the latrines.	Private pit latrine	The VIP latrines is OK because is control by the health worker who in the school.	
319	Male	18-20 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that it help student from getting sick, because the latrines is very comfortable, and help student when ever they want to go in the latrines, they are free.	The negative part about the latrines is that whenever the latrines door or window are not closed, and the good part of the latrines is that after using the latrines, and then you clean it or close the door.	Other	Private pour-flush commode, Shared pit latrine	
320	Female	18-20 years	11	No	2-3 times a month	Clean	Safe	Comfortable	The school latrines is not good because there no good care for it.	The school latrines is no good for students.	Other	Private pit latrine, Shared pit latrine	
321	Female	18-20 years	11	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that it help student to go out the school.	The negative or bad about the school latrines are is that the latrines is not fans.	Private pour-flush commode		
322	Female	18-20 years	11	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	The negative part about school latrines is that lack of soap and tissue.	Other	The school VIP latrines is very good and safe, there is no comment about the school VIP.	Private pit latrine, Shared pit latrine
323	Female	18-20 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that student do not go out to look for latrines to use.	The negative or bad about the school latrines is that lack of soap and tissue.	Other	The school VIP latrines is very good and safe, there is no comment about the school VIP.	Private pit latrine, Shared pit latrine
324	Female	18-20 years	11	Yes	1 time a week	Clean	Not Safe	Comfortable	The school latrines beneficial or good as for me.	The bad about the school latrines is because many people use it.	Private pour-flush commode		
325	Male	18-20 years	11	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	Yes, It is good because when the students want to defecate they go there.		No answer		

326	Male	21-25 years	11	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The good good or the beneficial part we see or we know is this 1. We have some good teacher, is you Sis Sarah and we can also understand I was lesson under her. Is one of the good thing.	We also see the children during some bad things will in this school when we return by to school we can see out classroom can be dirty. The children who always acter in many.	Shared pit latrine	
327	Female	21-25 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The good about the school latrines is that whenever we are on campus we use the latrines.	The negative or bad about the school latrines is that other community around the school use the latrines and some time they misuse it.	Outside (Bush)	
328	Female	26-30 years	11	Yes	1 time a week	Clean	Safe	Comfortable	Some room of the latrines are very clean even when you are there you fell good about the room.	But the negative side is that some of the rooms are not clean whenever you are there you don't feel comfortable.	Private pour-flush commode	What I have to say in addition is that my school latrine is not bad, but it just need good care and meantime and also good controlled.
329	Female	21-25 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The good about the school latrines is that when ever we are on campus we use the latrines.	The negative or bad about the school latrines is that other community around the school use the latrines and some time they misuse it.	Outside (Bush)	
330	Male	21-25 years	11	Yes	1 time a month	Dirty	Not Safe	Not Comfortable	The school latrines is not beneficial to me, because the latrines is not very clean.	The negative or bad about the school latrines is that there is no good care taken, no restriction, no controlled.	Private pit latrine	Really the school administration had to see reason to rerrillivate the school latrines, in other that the place be a comfortable. Thank you!
331	Female	18-20 years	11	Yes	1 time a month	Clean	Safe	Comfortable	The school latrines is beneficial or good because we use it sometime.	The school latrines is unclean.	Shared VIP latrine	
332	Female	18-20 years	11	Yes	2-3 times a week	Dirty	Very Unsafe	Very Uncomfortable	The good about the school latrines is that when ever we are on campus we use the latrines.	School latrines is bad because it a dirty.	Private pit latrine	
333	Female	26-30 years	11	Yes	2-3 times a week	Very Clean	Safe	Very Comfortable	The good about the school latrines is that when ever we are on campus we use the latrines.	The negative or bad about the school latrines is that other community around the school use the latrines and some time they misuse it.	Outside (Bush)	
334	answer	21-25 years	11	Yes	2-3 times a week	Very Dirty	Very Unsafe	Very Uncomfortable			Private pit latrine	
335	Male	21-25 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	Around the latrines is clean.	The students can toilet on the floor.	Private pit latrine	No additional comments.
336	Female	21-25 years	11	Yes	2-3 times a week	Very Clean	Safe	No answer	The beneficial or good about the school latrines is that you hoses are so from the campus so we use the latrines.		Private pit latrine	Really I don't see any negative or bad thing on the school latrine.
337	Female	18-20 years	11	Yes	1 time a week	Clean	Not Safe	Comfortable	Some of the room latrines are clean and some are very dirty.	But the negative side of the room are clean and the other side are very dirty	Private pour-flush commode	
338	Female	21-25 years	11	Yes	1 time a week	Clean	Not Safe	Not Comfortable	Some of the latrines is very clean and comfortable for the girls and boys because they take good care.	Some of the latrines is very bad and not comfortable for the girls and boys because of dirty.	Private pour-flush commode	
339	Female	18-20 years	11	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that, it help students not to go out the school.	The negative or bad about the school latrines is that the latrines is not fans.	Private pit latrine	
340	Female	18-20 years	11	Yes	2-3 times a week	Dirty	Very Unsafe	Very Uncomfortable	The school latrines is beneficial or good because we use it sometime.	The school latrines is bad because it is dirty.	Private pit latrine	
341	Female	18-20 years	11	No answer	2-3 times a month	Clean	Safe	Comfortable	The surrounding of the latrines is very clean.	The negative things about the latrines is in the latrines itself is unclean.	Private pit latrine	
342	Male	18-20 years	11	Yes	1 time a month	Clean	No answer	Comfortable	The beneficial or good about the school latrines is that, the school latrines have a pump that all students used to wash their hands after freedding theirselfs and also have a concret flode (concrete floor) that will last for more than 11 years and so on.	The negative or bad about the school latrines is that the school latrines, the children in the school also freed theirself on the flode (floor) and its make the latrines to smell.	Shared pit latrine	

343	Female	21-25 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is that our houses are so far from the campus, so we use the latrines.	Really, I don't see any negative or bad thing on the school latrines, because we use it and meantine (maintain) it well.	Private pour-flush commode	The school VIP latrine is use only for the VIP, and they meantine (maintain) the latrine very well, so I am so proud of my school latrine.	
344	Male	21-25 years	11	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrine is not good at all because as I said, there is no care for it.	The school latrines is very bad because there is no care for it.	Other	For additional we need you support for the area of latrines and also the school compound.	Private pit latrine, Shared pit latrine
345	Male	18-20 years	11	Yes	2-3 times a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is beneficial or good because if you comes on campus and you want to put out waste product or wage, it can help you put out you waste product or wage.	The negative or bad about the school latrines is when it is dirty we difference kinds of diseases from it.	Private pit latrine		
346	Male	21-25 years	11	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is the school latrines can always be clean every day.	The negative or bad about the school latrines is about the people who live near the school campus also use the latrines.	Private VIP latrine	The school latrines make me free good on campus. It is the beneficial or good about the school latrines.	
347	Male	21-25 years	11	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable		The negative or bad about the school latrines, first of all, before I explain, we the liberian people love us, but we don't love our self. (UNICEF with some health NGO have donated forms for schools latrines, but we don't know what they are doing. To come to your question, reason for which I said the school not having latrines is this, all the latrines on campus don't represent an institution lateries, so this is why I say the school not having latrines. Thank you for your understanding.	No answer		
348	Male	21-25 years	11	Yes	2-3 times a week	Very Clean	Safe	Comfortable	The latrines is but, it need good care and will be good.	The latrines is bad because the geater for the school is not taken good care of the latrines that is why is bad.	Private VIP latrine	My school latrines is not bad, but it need good care.	
349	Male	12-17 years	11	Yes	1 time a week	Clean	Safe	Comfortable	The beneficial or good part of the school latrines is that the school latrines has a pump, which is there, after using the latrines to wash your hand. It is also good for student to use it help the student to free themselves at anytime.	The bad of negative part of the school latrine it is not in an good atmosphere in which the latrine door can be open at any time.	Private VIP latrine	Yes! The school VIP latrines need shared pour-flush commode and some other material that is good for a latrines.	
350	Male	18-20 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrine is good because its surrounding is clean, and have a good flood (floor).	The school latrine is bad because it doesn't have commode in it.	Private VIP latrine	The school need more latrines with commode inside it for VIP used.	
351	Male	26-30 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	School latrines is good, because when the have a latrine than what so ever you will do on the campus is very safe.	When the school latrines is not in a good condition than the school campus is not safe for us the students, teachers.	Private pit latrine		
352	Male	18-20 years	11	Yes	2-3 times a month	Dirty	Safe	Not Comfortable	The beneficial or good about the latrines is it help us to release our self on campus.	The bad about the school latrines is only one who live near the school campus do not use the latrines itself, but rather use around the latrines and the toilet can pollute all class form near the latrines at school.	Private pit latrine		

353	Male	18-20 years	11	Yes	2-3 times a week	Clean	Safe	Comfortable	The beneficial or good about the school latrines is that house are so far from the campus so we use the latrines.	The negative or bad about the school latrines is that when ever the latrine door which for no rice which physic school compositive no reading book, so one please give reading book.	Other	The school VIP latrines is use on for the VIP and they meantine (maintain) the latrine which who the sudy physics studay latrine for the VIP and they who wantance.	Private pit latrine, Shared pit latrine
354	Male	21-25 years	11	Yes	1 time a month	Very Clean	Not Safe	Not Comfortable	The beneficial or good about the school latrines is pain in and out and also it make me free myself on campus.	The negative or bad about the school latrines is every one who live near the school campus can use the school latrines.	Private pit latrine		
355	Male	18-20 years	11	Yes	1 time a month	Dirty	Not Safe	Not Comfortable	The negative about the school latrines is not good the latrines is very dirty.	Every one who live need the school campus go in the latrines	Private pit latrine	Really the school latrines is not good for people to go in the school latrines.	
356	Male	18-20 years	9	No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty indeed. I (as) for me I am not used it yet, and I am not benefit from it.	The school latrines is very, very bad indeed.	Shared pit latrine	I am kindly calling on the health club to please come and help us with the latrines, thank you for your understanding and paying concrete attention.	
357	Female	18-20 years	9	Yes	2-3 times a week	No answer	Very Safe	No answer	Our school latrine is very good because we have everythings.	very clean, but not deep	Private pit latrine		
358	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Safe	Very Comfortable	The school latrines is very good. It also make me to feel fine it I ental in it.	There is nothing that is bad about the school latrine the school latrine is very comfortable.	Private VIP latrine		
359	Female	18-20 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The latrines is very good, it make us to release ourselve it benefit us not to go out to the school.	The bad thing is that no controlling of the school latrines, everybody go and misuse it.	Private pit latrine		
360	Male	18-20 years	9	No	No answer	Dirty	Very Unsafe	Not Comfortable	The good about the school latrines is the building and pump around it make it good.	The bad about the latrines very dirty, grass all around the building, pepe around it that make it bad.	Outside (Bush)		
361	Male	18-20 years	9	No	No answer	Very Clean	Not Safe	Very Comfortable	The school latrines is for the whole school because but health is also good for the student and help us also.	The negative part of the school latrines is not been clean. Also they pollute the school.	Private pit latrine		
362	Male	18-20 years	9	Yes	Every day	Very Dirty	Very Safe	Comfortable	The school latrines help me not to used the bush and also gave me safe life.		Private VIP latrine	No comment regarding to the school VIP latrines because it is very clean and useful during to the safeness today I am safe.	
363	Female	21-25 years	9	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is not good.	The school latrines is very much unsafe for using.	Private pit latrine	I am asking the Ministry of Health to please help us to clean our latrines.	
364	Male	18-20 years	9	Yes	2-3 times a month	Dirty	Very Unsafe	Not Comfortable	The good about the school latrines, the building and the pump (pump) around the school.	The bad of the latrines is all around is bush no good door for the latrines.	Private pit latrine		
365	Female	21-25 years	9	Yes	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is help me sometime use it on campus.		Private pit latrine		
366	Female	21-25 years	9	Yes	1 time a month	Clean	Not Safe	Comfortable	The school latrines is good to use	The school latrines is very goo to use	Private VIP latrine		
367	Male	18-20 years	9	No	Less than once a month	Dirty	Not Safe	Not Comfortable	The latrines is very desent, good construction.	The student sit on the door and taller	Private pit latrine		
368	Male	21-25 years	9	No	1 time a month	Very Dirty	Not Safe	Not Comfortable	For are ours latrines is not clean, because a have to one to clean it.	For they bad negative they is bad. Because sometime students sit on the door to taller (toilet).	Private pit latrine		
369	Male	18-20 years	9	Yes	Every day	Very Dirty	Very Unsafe	Not Comfortable	Nothing is good about the school latrines.	The school latrines is very dirty, not save to be used in other to no (know) how to clean the latrines in the school we have to get cleaner for the latrines.	Private pit latrine	There is no comment about the VIP latrines.	
370	Male	18-20 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines should have been a good and desent latrines and also it very good to take care of the school latrines.	The school latrines should have been a good and desent to be use.	Shared VIP latrine	No	

371	Male	18-20 years	9	No	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty so it can be hard for me to go there.	The latrines is not in good condition.	Outside (Bush)	Please, I need your help from you.
372	Female	12-17 years	9	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrine help me not to use the bush.	There is no negative or bad thing about the school latrines.	Private VIP latrine	There is no additional comments regarding the school VIP latrines.
373	Female	12-17 years	9	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines help us because at the people who take care of the school latrines make show (sure) to clean the school latrines.	There is no negative or bad about the the school latrines. At for me no negative or bad about the wlrines.	Private VIP latrine	There is no additional comments regarding the school VIP latrines.
374	Male	21-25 years	9	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial of the school latrines is It can make us we can go outside or in the bush to go in the latrine.		Shared pit latrine	
375	Female	18-20 years	9	No	No answer	Very Dirty	Very Safe	Comfortable			Private VIP latrine	
376	Male	18-20 years	9	No	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The beneficial or good about the school latrines is when the school latrine is clean, we can be healthy, but when it is dirty we contact disease from the latrines.	The school latrines is very dirty to the extend that we can not be able to go in it.	Private pit latrine	The comment that regarding the school VIP latrines is that the latrines is very bad for using. So we are appealing to you to please build us a latrine.
377	Male	18-20 years	9	No	1 time a month	Dirty	Not Safe	Not Comfortable	Even though we had benefited (laker (lack) of material) for the school latrine some are hoe shovel rack.	The school latrine is very much unsafe for using the latrine we are able to use it contaminated to the estate.	Outside (Bush)	We are asking Ministry of Health and social welfare to add some challedent people on this school health club.
378	Male	18-20 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The beneficial or good about the school latrines is that the people who take care of the school latrines make show (sure) to clean the school latrines and which (wash) it every day.	There is no negative or bad about the school latrines at for me no negative or bad about the latrines.	Private VIP latrine	There is no additional comments regarding the school VIP latrines.
379	Female	12-17 years	9	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The beneficial about the school latrines is we have all the necessary material for the school latrine.		Private pit latrine	
380	Male	21-25 years	9	Yes	2-3 times a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines in not too bad and also not too clean, we clean the latrines evet week two times.	The latrines is not too dirty but there are some people that use the latrines with bad heart.	Private pit latrine	
381	Female	21-25 years	9	No	2-3 times a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very uncomfortable because of that we can use the school latrines.	The school latrines is not clean, it is very bad.	Private pit latrine	
382	Male	18-20 years	9	No	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is good for the student to use it. It benefic the school and help.	The school latrines is very unsafe for the student to use it.	Private pit latrine	
383	Male	21-25 years	9	Yes	2-3 times a week	Clean	Safe	Very Comfortable	The school latrines is very clean because I always go the and my little sister and brother can use it always so.	The school latrines is not bad because most of us use the school latrines.	Private pit latrine	
384	Male	18-20 years	9	No	2-3 times a week	Clean	Safe	Very Comfortable	The school latrines is very good but since been in this school not used it before.	The school latrines is not bad because most of us use the school latrines.	Private pit latrine	
385	Male	12-17 years	9	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines help us in order to be in school. If no good latrines we will like to stayed away.	It is ready bad, it the school latrines is not comfortable.	Private VIP latrine	No comments
386	Male	18-20 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial of good about school latrines is that the people who take care of the school latrines make show (sure) to clean the school latrines and which (wash) it eveling (every) day.	These is no negative or bad about the school latrines. At for me no negative or bad about the latrines.	Private VIP latrine	There is no additional comments regarding the school VIP latrines.
387	Male	21-25 years	9	No	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is very dirty so if can be harm for my	The latrines is not in good condition.	Outside (Bush)	
388	Male	18-20 years	9	Yes	No answer	Very Clean	Very Safe	Very Comfortable	We are beneficial our school latrines because our school latrines is very safe.	The negative or bad about the school latrine the bad about the school is the small (smell) do not no have to use it.	No answer	We are asking the Ministry of Health to give us some meatrial (material) of school latrine for the school health club.
389	Female	18-20 years	9	Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school beneficial is the latrines because it is very clean and safe.	The latrines is very clean indeed.	Shared VIP latrine	No comments

390	Male	21-25 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines is very bad, because people who are not from part of the school are using it badly.	The school latrines was safe before, but the school earth club are trying their best toward it.	Private pit latrine	For me the only comment I have about the school VIP latrines is the VIP latrines is not in fence (fence) so from the outside can go there any time they want.
391	Female	18-20 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very good and it also make us to free fine.	There is nothing that is bad about the school latrines.	Private pit latrine	
392	Female	21-25 years	9	Yes	1 time a week	Clean	Very Safe	Very Comfortable	We are beneficial our school latrines because our school latrines is very safe.	The negative or bad about the school latrines the do bad about the school latrines small how to use school latrines	Shared VIP latrine	We are asking the Ministry of Health to give us some material (material) of school latrine for the school health club.
393	Female	18-20 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The latrines is very good, it make us to relieve for us, it benefit us not too go out to the school	The bad thing is bad about the school latrines	Private VIP latrine	
394	Male	18-20 years	9	No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty indeed, it is not comfortable.	The school latrines is bad for using, it is not good.	Shared VIP latrine	We are asking the Ministry of Health and Social Welfare to add some charcoal to the school latrines.
395	Female	21-25 years	9	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The beneficial of the school latrines is very dirty indeed it is not comfortable.	The school latrines is bad because it is not clean	Private VIP latrine	
396	Female	21-25 years	9	Yes	1 time a week	Clean	Very Safe	Very Comfortable	We are beneficial our school latrines because our school latrines is very safe.	The negative or bad about the school latrines we do bad about the school how to use latrines	Private VIP latrine	We are asking the Ministry of Health to give us some material (material) of school latrine for the school health club.
397	Female	18-20 years	9	Yes	1 time a week	Dirty	Very Unsafe	Not Comfortable		The bad about the school latrines there is not water to clean hand after using the latrines.	Private VIP latrine	
398	Male	18-20 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines can help us you can go outside to toilets (toilet).	The school latrines is very clean but is not deep.	Private pour-flush commode	
399	Male	18-20 years	9	Yes	1 time a month	Very Dirty	Not Safe	Very Uncomfortable	I saw some of the beneficial that school one come in with such are: the zinc and semite (cement).	Is very bad because the latrines very unsafe, unclean this is made the school latrine. Again no water to be used after for using the latrines.	Private VIP latrine	I am very happy to see some expansion to come to us.
400	Male	12-17 years	9	Yes	2-3 times a week	Clean	Very Safe	Very Comfortable	The school latrines is very clean.	The latrines after using it, there is no water to wash your hands.	Private pit latrine	
401	Male	18-20 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable		The latrines after using it, there is no water to wash you hand, and also the grass around the toilet house.	Private pit latrine	
402	Female	21-25 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean because she do well.	The school latrines is not bad, she this well for the school latrines.	Outside (Bush)	
403	Female	26-30 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines is very comfortable because she do well.	The school latrines are not bad, it looking very nice.	Outside (Bush)	
404	Male	18-20 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrine is very clean and it very safe because every work day we clean our school campus and latrine.	Only the pollution is bad, but the latrine is very clean, we clean the surrounding but not deep.	Private pit latrine	
405	Female	No answer	9	No	No answer	Very Clean	Very Safe	Very Comfortable	Some of the good things about the school latrines is, the health club provide cleaning materials.	The latrines is very bad because the students sometimes use the latrines the way they are not supposed to use it.	Private VIP latrine	
406	Female	21-25 years	9	Yes	1 time a week	Very Clean	Very Safe	Comfortable	The beneficial about the school latrines is that the ple who take care school		Private pit latrine	
407	Female	12-17 years	9	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The beneficial or good about school latrines is that the people who take care of the school latrines make show to clean the school latrines.		Private VIP latrine	

408	Male	12-17 years	9	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school latrines helps we the students and the other people for our saveily. So this is why make our latrines importance to us.	The school latrines is actually improper.	Private pit latrine	Actually there is no comments because the VIP latrines is very comfortable.
409	Male	18-20 years	9	Yes	2-3 times a week	Dirty	Very Unsafe	Not Comfortable		The school latrines is bad because the latrine have on (no) care taker like cleaner. There is an dady (anybody?) to take the dirt away.	Private pit latrine	
410	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean and it look beautiful.	The latrine have blue colors and white color and it having wash hands pump.	Private pit latrine	I am very for the VIP latrines.
411	Female	21-25 years	9	Yes	2-3 times a week	Dirty	Very Safe	Not Comfortable	The school latrines is not good		Private pit latrine	
412	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very good. Our officials are doing well. They carrying on collaboration in order make our latrines very safe.	The things that is bad about the school latrines is water because after latrines there is no water to wash your hands. That is bad about our school latrines.	Private pit latrine	I fell very comfortable about the information. Our school latrines is very safe. Thank you for your information.
413	Female	18-20 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very dirty.	The latrines is dirty	Private pit latrine	
414	Female	26-30 years	9	Yes	2-3 times a week	Very Clean	Very Unsafe	Very Uncomfortable	The school latrines is not safe because the can wash it every day.	The dirty, toilet all around the latrine	Shared pit latrine	The school VIP latrines is clean and safe. The school VIP also have lock to the door.
415	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The school latrines is good to use because when you are using it, you can not smile (smell) any feces and no fly go around the area.	The school latrines is good to use when you are using it, you can feel free and comfortable within the time of using it.	Private pour-flush commode	No any additional comments regarding the school VIP latrines.
416	Male	18-20 years	9	No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines not good for using because it does not make you feels when you in it.	The negative part on the latrines is the inside part I feels bad about it.	Private VIP latrine	Yes, the additional comment is the water flash they use all the time is very dirty.
417	Male	21-25 years	9	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines have to be clean and comfortable for every student on campus of the school. If the latrines is safe, everyone who goes there will be safe.	The bad side of the latrines is, if the latrines is dirty, the person who is using the latrines will get sick.	Private pit latrine	
418	Female	21-25 years	9	Yes	1 time a month	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty indeed.	When the sun is very hot or when the wind blow the latrines smelled very bad.	Shared pit latrine	
419	Male	12-17 years	9	Yes	1 time a month	Clean	Safe	Comfortable	The school latrines are good or beneficial because it makes people to use the excretory system well as the time it uses you to excrete. It is also good because it provides comfortable ways of putting out waste products.	The negative or bad side about the school latrines is that the nearby people or the street walking people use the latrines as theirs more than the students.	Private pit latrine	The same comments are mentioned in #10.
420	Male	21-25 years	9	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very good because we use it to dicate (defecate?) our self.	The negative about the school latrines is very bad.	Shared VIP latrine	
421	Female	18-20 years	9	Yes	1 time a week	Very Dirty	Very Safe	Very Comfortable	The school latrines beneficial because it has door, water to watch (wash) your hand.		Shared pit latrine	
422	Female	18-20 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines do not good to use because it very dirty.	The school latrines it is very bad.	Shared VIP latrine	In the additional regarding in the school VIP latrines is very dirty.
423	Male	No answer	9	No	No answer	Dirty	Not Safe	Not Comfortable		I student Sam E.J. Korwash, have discovered that the negative part about the school latrine its very dirty and polluted.	Private VIP latrine	I want for our school VIP latrines to have some volunteer boys and girls that will be assigned at the latrines to monitor the user of the latrines and do some cleaning, for our school VIP latrines to be comfortable.

424	Female	18-20 years	9	Yes	1 time a week	Very Clean	Very Safe	Comfortable		What is bad about the school latrines is the whole place is full with pupu all out side.	Private VIP latrine	The good about the school latrines is whenever you come from the latrines the is water and soap for washing hands
425	Male	21-25 years	9	Yes	2-3 times a week	Clean	Safe	Comfortable	The beneficial or goodness about the school latrines is the latrines is very bad and unsafe for our use in the school.	The negative or bad about the school latrines is the latrines is very unsafe for our use and not comfortable for our use.	Outside (Bush)	The comments regarding to this latrines is others from outside are using the latrines.
426	Male	7-11 years	9	Yes	Every day	Clean	Safe	Comfortable		Is good we feel fact our we are in school	Outside (Bush)	My comments on the school batch nomy good.
427	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	The latrines is good because around it is very clean and we used it every day also we clean all around it and inside and it was safe for to use everyday.	The school latrines is bad because is can not lock some people can come from our of the community and used also the community can also used it that what make bad, the latrines is there for the student	Private pit latrine	The school VIP latrines have to be lock because is not there for the community people and the practic people.
428	Female	21-25 years	9	Yes	2-3 times a month	Very Clean	Safe	Very Comfortable	It keep us on compound doing selection	For me it look clean because I use the bush latrines at my home so this school latrines look very clean to me	Outside (Bush)	The comments I have on the VIP latrines others people from outside (outside) the school that live in their community use our school latrines.
429	Female	18-20 years	9	Yes	2-3 times a month	Very Clean	Safe	Very Comfortable	The people that from outside using the school latrines.	For me it look clean because I use the bush latrines at my home.	Outside (Bush)	The comments I have on the VIP latrines others people from outside (outside) the school that live in their community use our school latrines.
430	Male	21-25 years	9	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	I was school latrines very bad but a few month the water pour that was on the compound is Diamedu that is it.	The school latrines is not under restriction because our teacher they not com for it.	Other	(Yes) the school VIP latrines is have to be uniak Inside bathroom
431	Female	21-25 years	9	No answer	2-3 times a week	Very Dirty	Not Safe	Very Uncomfortable	The school latrines need a good care (care)	The school latrines is very bad because there is no good care (care)	Shared pit latrine	Information is very good because it with made the latrines to be very clean.
432	Male	18-20 years	9	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	It is beneficial or good because it have when offer using you be dose it from the latrines it unable to use it.	It is negative or bad because it does not have a good inside condition because some people use it as a time their own latrine	Outside (Bush)	The school latrine is very bad because it had help used by other people
433	Female	21-25 years	9	No	2-3 times a week	Very Dirty	Not Safe	Very Uncomfortable		The school latrines is very bad because there is no good care (care)	Private pour-flush commode	
434	Male	21-25 years	9	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	What is beneficial about the school latrine sometime we toilet in the school latrine when we want toilet.	What is negative about the school latrine other people from community use the school latrine for toilet.	Private pit latrine	(yes) the school VIP latrines must be lock when student or teacher is not campus
435	Male	18-20 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school is not beneficial from the school latrines. The school need to have good latrine for the student to be comfortable while they are using the latrines, I want for the school latrines to be clean	The latrines is too bad for the school and every thing school have good latrines.	Shared VIP latrine	
436	Female	21-25 years	9	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable			Shared VIP latrine	The question is very goods
437	Female	21-25 years	9	Yes	2-3 times a week	Very Clean	Safe	Not Comfortable			Shared VIP latrine	
438	Male	18-20 years	9	Yes	1 time a week	Very Dirty	Not Safe	Comfortable			No answer	
439	Female	18-20 years	9	Yes	1 time a week	Very Clean	Very Safe	Comfortable	I am happy about the school latrines because it is clean and comfortable. I may us happy.		Private pit latrine	
440	Female	12-17 years	9	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable			Private pit latrine	



441	Male	18-20 years	9	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	It is beneficial or good because it has doors, when after using it you can close it from every unauthorized individuals from using it because it was built for students of that institution.	It is negative or bad because it does not have a good inside condition because some people just used it as their own latrine. When after using it they have no time to have it close from other parasites, it is sometimes bad because if you enter inside, you see poopoo all around.	Outside (Bush)	The school latrines is very bad, because it had been used by other people around the school, sometimes bad because if you enter inside you see poopoo all around the latrine.
442	Male	18-20 years	9	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	What good about the school latrines is that around the latrine is clean and the wash hand pump help we student to prevent diarrhea and other diseases.	What is bad about the school latrine is that the latrines are fell and the sent (scent) from the latrines is spread out and the classes are polluted which of course is bad for our health.	Other	Yes: My additional comments regarding the VIP latrines at our schools is that we need additional latrines center and for the girls at the school need to be saved from the latrines diseases. The latrines are fell (foul) and the girls who have infection from vagina may some time have running stomach and will go and sit on it and secondly, the latrine is meant only for the school and it will not be good that community members go and release them self there. They sometime bust the lock and put there own lock on the door by night and there is no security on campus so thats my comment towards the latrines of the school.
443	Male	21-25 years	9	Yes	Every day	No answer	Very Safe	Comfortable	My explain is the exproid the prineder to you in the my stredric et which are golling to school to help my family home	My describe to please to which of the butenter is stredres trineter stredr tenster	Private pit latrine	
444	Male	18-20 years	9	Yes	No answer	Very Clean	Very Safe	Very Comfortable	The good ness about the school latrines is very comfortable for the student so we use the latrines without problem.	The negative or bad about the school latrines due to some problem of the school gate, because the school gate are not safe so any individual can come in to use the school latrine. So that is the negative of our school latrines.	Shared VIP latrine	
445	Female	26-30 years	9	Yes	1 time a week	Very Dirty	Not Safe	Very Uncomfortable			Shared VIP latrine	
446	Female	21-25 years	9	Yes	1 time a week	Very Dirty	Not Safe	Very Uncomfortable			Shared VIP latrine	
447	Male	18-20 years	9	No	No answer	Clean	Not Safe	Not Comfortable	The school latrines are not too clean because we are not using it correctly. We need new latrines in the school, the one we are using full with toilet there know (no) way to clean it again. Of course it is good in condition.	The school latrines is very bad in condition and event the location of the latrines is very bad.	Outside (Bush)	
448	Male	12-17 years	9	No	1 time a month	Dirty	Not Safe	Not Comfortable	The beneficial of the school latrine is our school latrine are not comfortable and not clean at all.	The bad of our school latrine is our school latrine is unclean and its smell bad.	Shared VIP latrine	1 We want you to helps us to clean our latrines. 2 we want you to please help build new latrine
449	Female	26-30 years	9	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable			Shared VIP latrine	
450	Male	18-20 years	9	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines have to be very clean and comfortable for student on campus of the school.	The bad side of the latrines is because the boys and girls use one room.	Private pit latrine	
451	Female	12-17 years	9	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines have to be clean and safe for every students on campus.	The bad side of the latrines is if the latrines is very dirty people who using it every day will be sick.	Private pit latrine	

452	Female	18-20 years	9	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines beneficial or good is because the school latrines is very bad. The people lives area the school used the latrines all of the times and also the school latrines is not comfortable for us is very bad.	The negative or bad about the school latrines is that the school latrines is uncomfortable because it smell very bad and make schools sick with all kinds of sickness.	Shared pit latrine	The additional comments regarding the school VIP latrines is because the school administration is not take good care of the school latrines no care talk (taker) for the latrines.
453	Female	18-20 years	9	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines beneficial or good because the school latrines is very bad. The people live area	The negative or bad about the school latrines is that the school latrines is uncomfortable because it smell very bad and make school sick with all kind of sickness.	Outside (Bush)	The additional comment regarding the school VIP latrines is because the school administration is not take good of the school.
454	answer	No answer	5	Yes	Every day	Very Dirty	Safe	Very Uncomfortable	The school latrines is spoil no door, no water, no window (window?)	Outside (Bush)	The school VIP latrines clean
455	Male	12-17 years	5	Yes	2-3 times a week	Dirty	Safe	Very Comfortable	The school latrine is clean.	No answer	The school VIP latrine is clean.
456	answer	No answer	5	Yes	Every day	Very Dirty	Not Safe	Very Uncomfortable	The school latrines is spoil, no door, no water, no	Outside (Bush)	The school VIP latrine is clean.
457	Male	7-11 years	5	Yes	1 time a week	Very Dirty	Not Safe	Very Uncomfortable	The school latrines are very dirty around it and also we cannot fetch it.	Shared VIP latrine	The school is very dirty please help us.
458	answer	No answer	5	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines as very bad we not have all of this things in it.	Outside (Bush)	The VIP latrines is bad the school latrines VIP is bad
459	answer	No answer	5	Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The latrines is very bad so we can't go in it every day.	Outside (Bush)	The school latrines VIP is very good.
460	Male	12-17 years	5	Yes	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is bad because latrines is dirty	Shared pit latrine	very bad
461	Male	18-20 years	5	Yes	Every day	Very Dirty	Safe	Very Uncomfortable	The school latrines is not safe but it is dirty	Outside (Bush)	No
462	Male	7-11 years	5	No	No answer	Dirty	Not Safe	Not Comfortable	Nothing is good.	Private pit latrine	is very clean
463	Male	12-17 years	5	Yes	Every day	Very Dirty	Safe	Very Uncomfortable	The school latrines is not safe but it is dirty	Shared VIP latrine	
464	Male	12-17 years	5	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	Nothing good in the school latrines	Private VIP latrine	The school VIP latrines is very clean
465	Male	12-17 years	5	Yes	1 time a week	Dirty	Not Safe	Not Comfortable		Private pit latrine	The school VIP latrines is very very good
466	Female	12-17 years	5	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable it does small (smell) good, it small (smell) very bad.	Private VIP latrine	The school VIP latrines is very good.
467	Female	12-17 years	5	No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	is not good	Private pit latrine	The school VIP latrines is good.
468	Male	18-20 years	5	No	1 time a month	Dirty	Not Safe	Not Comfortable	The school latrines not good.	Private pit latrine	is very dirty.
469	Male	12-17 years	5	Yes	2-3 times a week	Clean	Safe	Comfortable	The school latrines clean.	Private pit latrine	The school VIP latrines is clean.
470	Male	12-17 years	5	Yes	1 time a week	Clean	Safe	Comfortable	The school latrine is clean.	Private pit latrine	The school VIP latrines is clean.
471	Male	12-17 years	5	No	No answer	Dirty	Not Safe	Not Comfortable	The area we use to wash our hand after use latrines is not have water.	Private pit latrine	The school VIP latrines is clean.
472	Female	12-17 years	5	No	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school look is not comfortable it dead small good (small) bad	Private VIP latrine	The school VIP latrines is very bad.
473	Female	12-17 years	5	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable it does not smell food, it small bad	Private pit latrine	The school VIP latrines is very good.
474	Male	18-20 years	5	No	1 time a week	Clean	Not Safe	Comfortable	The school latrines clean.	Outside (Bush)	
475	Male	12-17 years	5	No	No answer	Dirty	Not Safe	Not Comfortable	The school latrines have pump where you can wash your hand after using it.	Private VIP latrine	The school latrines is build good but the student cannot take good care of it

476 Male	12-17 years	5 No	No answer	Dirty	Not Safe	Not Comfortable	The school is not safe The latrines is not safe but we just wave to mager (manager) It because we don't have	My school latrines is because if you go in the latrines you will wee pu right at	Private pit latrine	Is very clean
477 Male	12-17 years	5 Yes	1 time a week	Clean	Safe	Comfortable	The school is very clean	The latrines is not bad	Shared pour-flush commode	Oh yes, the latrines is very moust stand
478 Female	7-11 years	4 No	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean	The school latrines is very good	Private pit latrine	The school VIP latrines is vray
479 Male	12-17 years	4 No	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean	The school latrines is very good	Private pit latrine	The school VIP latrines is very safe
480 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean	The school latrines is very good	Private pit latrine	The school VIP latrines is very safe
481 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	No answer	The school latrines dan (clean)	The school latrines very	Private pit latrine	The school latrines is very good.
482 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines dan (clean)	The school latrines is very	Private pit latrine	The school latrines is very good.
483 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines dan (clean)	The school latrines is very dan.	Private pit latrine	The school latrines is very good.
484 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean	The school latrines is very good	Private pit latrine	The school VIP latrines is very safe.
485 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines is very clean	The school latrines is very good.	Private pit latrine	The school VIP latrines is very safe.
486 Female	12-17 years	4 Yes	1 time a week	Very Clean	Very Safe	Very Comfortable	The school latrines dan (clean)	The school latrines is very	Private pit latrine	The school latrines is very good.
487 Male	12-17 years	4 No	No answer	Very Dirty	Not Safe	Not Comfortable	The latrines is not good. I don like the latrines, it is very dirty.	The latrines is not comfortable for us.	Shared pit latrine	We need pump and latrines.
488 Female	12-17 years	4 Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable		The school latrines smells every day.	Private pit latrine	The school latrines is nut new for using
489 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The first day went day fsel it, it was fine	The school latrines smells	Private VIP latrine	
490 Male	12-17 years	4 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The first day went day fsel it was fine	The school latrines smells	Private pour-flush commode	We need pump (drawing).
491 Male	12-17 years	4 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	It was fine	The school latrines smells	Private pour-flush commode	We nine pump (drawing).
492 Female	No answer	4 No	2-3 times a month	Very Dirty	Not Safe	Not Comfortable	The school latrines is dirty	The school latrines smells	Outside (Bush)	We ane a pump
493 Female	12-17 years	4 No	2-3 times a month	Very Dirty	Very Unsafe	Not Comfortable	Thus mask		Shared pit latrine	pump
494 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The latrines is not safe.	The school latrines can smell	Outside (Bush)	I one our latrines to smell good.
495 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The school latrines is not good.	The school latrines smells every day	Private pour-flush commode	We went flush commode and pump your do sun for good.
496 Male	12-17 years	4 Yes	Every day	Very Clean	Not Safe	Not Comfortable	The school is note not good	The every day smells	Private pit latrine	Always wash your hand with soap and water to prevent diarrhea.
497 Female	12-17 years	4 Yes	2-3 times a week	Very Dirty	Not Safe	No answer		People luru to pupu is dy	No answer	The any and the latrines is pit good
498 Male	12-17 years	4 No	Less than once a month	Very Dirty	Not Safe	Very Comfortable		The latrines is dy	Private pit latrine	The latrines dy
499 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Very Uncomfortable	The school latrines help (help) me.	The school latrines is very smells make me sick	No answer	The VIP latrines is not good for me so we want your to help me so what are cannot get sack (sick). God time is the best.
500 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	They good thing the latrine they for us is good thing who humon body	The bad thing about the school latrines is smells bad	Private pit latrine	We want a good latrines in is school In J.C. Barlee who want get a big pump.
501 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable		The school latrines is very dirty is can not give our good safe	Outside (Bush)	We one (want) pump in our school.
502 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The school latrines is not good	The school latrines smell every day	Private pour-flush commode	I love commode and god (good) water to be on this school.
503 Female	12-17 years	4 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines sefe	The school latrines it can smell very by	Other	No safe, the latrines is not safe, we need flush commode and some other thing Outside (bush) and private VIP latrine
504 Female	12-17 years	4 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is very clean	The school latrines is very dirty	Shared pit latrine	We need flush commode and some only things
505 Female	12-17 years	4 Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is build good	The school latrines is very dirty	Shared pit latrine	We need flush commode and some only things
506 Female	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The school latrines is not safe	The school latrines is smells everyday	Private pour-flush commode	I love commode water to be latrine. Peterline Bao pump
507 Male	12-17 years	4 Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	I free bye (feel bad) about my school latrines why (we) are free by (but) is the place is air undirty.	The place is ver di bad Why I sunt the place is good elfen (even) about our school latrine	Private pit latrine	
508 Female	18-20 years	4 Yes	Every day	Very Dirty	Very Unsafe	Not Comfortable	The good thing about the latrines around is very clean	the latrines is very dirty	Shared pit latrine	When avery (ever) we set in this class that latrines smalle in the class so I want you to chnro
509 Male	18-20 years	4 Yes	Every day	Very Dirty	Very Unsafe	Comfortable	The latrines is very brhy is on clean	The school latrines is very brhy (very very) smells	Private VIP latrine	The school latrines save is of

510	Male	12-17 years	4	No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	I free bye (feel bad) about my school latrines why (we) are free by (but) is the place is air undirty (very dir).	The place is bad Why I saw (say) the place is bay (bad) Is no good clean about our school latrines	Other	The school is very bad	private VIP latrine, Private pour-flush commode
511	Female	12-17 years	4	Yes	Every day	Very Clean	Not Safe	Very Uncomfortable	is not good	the latrine is smells	Shared VIP latrine	we one (want) private pour flush commode	
512	Male	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Very Uncomfortable	because if you come to school if you not latrines the school latrines is very bad	the latrines smells every bad the bad for the school is dirty	Outside (Bush)	we went (want) new latrines this latrines is very bad and if you do that for us we will thank you	
513	Male	12-17 years	4	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	bad	Private pit latrine			
514	Male	12-17 years	4	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrine is very clean	The school latrines is very clean Is smells every day	Private VIP latrine	The school latrines is very dirty we one (want) new latrines in arer (our) school	
515	Female	12-17 years	4	No	Every day	Very Dirty	Not Safe	Not Comfortable	The school is dirty	Private VIP latrine		for you to porty latrine	
516	Male	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The school latrines is not good	The school latrines is smells everyday	Private pour-flush commode	The school latrine is not good forry ever body The school latrine meat (need) flush commode and water pale	
517	Male	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The latrine is good same time (sometime) to me I love the will (way) the latrines look	The school latrines smells everyday	Private pit latrine	I love the commode and water by Prince Barley Teddy Jr	
518	Female	12-17 years	4	Yes	Every day	Clean	Very Unsafe	Not Comfortable	The school latrines is dirty and by (dirty and bad)	The latrines is not comfortable for us.	Private pit latrine	The school, I need a water place	
519	Male	12-17 years	4	Yes	Every day	Clean	Very Safe	Very Comfortable	Like the way TWI student clean it sometime It can not smell It can smell good	When we seat (sit) in class the latrine can smell and it is not clean	Outside (Bush)	Yes TWI latrines can be us by VIP latrine are (!) did not like the way it can smell when we in class	
520	Male	12-17 years	4	Yes	Every day	Clean	Safe	Comfortable	The school latrine is dirty and by (dirty and Bad)	The school latrines is by becor (bad because) the pupu can on the grown (ground)	Private pit latrine	Are (!) once (want) you to put very comfortable latrines	
521	Female	12-17 years	4	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	the good thing about the latrines is around it is very clean	the latrines is very dirty	Shared pit latrine	When every we set (sit) in this class the latrines smell (smell) in the class. So I want your to chneg (change) it.	
522	Female	12-17 years	4	Yes	Every day	Very Dirty	Safe	Very Uncomfortable	the school latrines is very unsafe	the school latrine is not every smell bay	Other	I need new latrines	private VIP latrine, Private pour-flush commode
523	Female	12-17 years	4	Yes	1 time a week	Very Dirty	Not Safe	Very Uncomfortable	The school latrines become if you come to school	the school latrines it smells	Private pit latrine	We once (want) the private IVP latrine	
524	Female	12-17 years	4	No	2-3 times a month	Dirty	Very Unsafe	Not Comfortable	thus school	Other		we smells the is lim you school	Private pit latrine, Private pour-flush commode
525	Female	12-17 years	4	Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is not build good	The school latrines is not safe	Private pit latrine	No safe latrines the VIP latrines is not safe	
526	Male	12-17 years	4	Yes	Every day	Very Clean	Very Safe	Very Uncomfortable	The latrines of the school is very good and safe because the school latrines is very dirty that is not safe for us	Our school did not have a good commode The bed (bad) part of the latrines is to ugly and dirty	Outside (Bush)	The only bad things is about the commode because it smell very bad	
527	Female	12-17 years	4	No	Every day	Very Dirty	Not Safe	Not Comfortable		the very dirty to us so we need latrines	Private VIP latrine	the school VIP altr the VIP latrines is very good	
528	Male	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Very Comfortable	the latrines is very good	this school make me seplea by	Outside (Bush)	the VIP latrine private pir latrine	
529	Female	12-17 years	4	Yes	1 time a week	Very Clean	Safe	Not Comfortable					
530	Female	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Very Uncomfortable	I frtt about my school latrines why ae tret by is the place is undirty (very dir)	everything is bad	Shared pit latrine	the VIP latrines	
531	Female	12-17 years	4	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	the school is dirty	the school smell	Shared pit latrine		
532	Male	12-17 years	4	Yes	2-3 times a week	Very Clean	Very Safe	Very Uncomfortable	I wat come	people wate to pupu come the	Private VIP latrine	I you wot to come to bowat weat to you come to bowat	
533	Male	12-17 years	4	Yes	Every day	Very Clean	Very Unsafe	Very Uncomfortable	the school is very good for us and safe us	our school latrines do not have good commode	Private VIP latrine	the only bad things is the commode because it small (smell) very bad	
534	Female	12-17 years	4	Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	I don like the latrines. It is very dirty.	The latrines is not comfortable for us.	Private pit latrine	The school latrines is not safe. The latrine is dirty. I need a water place	
535	Male	12-17 years	4	Yes	2-3 times a week	Very Clean	Not Safe	Very Comfortable	Foot the latrines good the latrine say of all	the latrines is veary dirty to all the child	Private pour-flush commode	The VIP latrines is not say (safe) for the student. We name say (need safe) latrines for all student.	
536	Female	12-17 years	4	Yes	Every day	Very Dirty	Not Safe	Not Comfortable	because all the school lotimes (latrines) is very dirty (dirty) that is not safe for us	the bed (bad) part of the latrines is very good	Private VIP latrine	the school VIP latrines is ur	

537 Female	12-17 years	4 Yes	1 time a week	Very Clean	Safe	Very Uncomfortable	The latrine is very good to me. Bet (but) not safe for us.	The latrines is not safe for let them build new of for us.	other	The school latrines is try bet (but) the children using not that was	Outside, private pour-flush commode, shared pour-flush commode
538 Male	12-17 years	4 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	because the school latrines is very dirty then is not fair again	the bad part of the latrines is because the latrines is very dirty the school latrines is	Other	Please! you to please try to bia our latrines on June 20, 2014 with (which) will be on next before week. Thank you Gog (God) bless you ma.	Private pit latrine, Private VIP latrine, Shared pit latrine
539 Female	12-17 years	4 Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is good	the school one smells good	Shared pit latrine		
540 Female	12-17 years	4 Yes	Every day	Very Dirty	Very Safe	Very Uncomfortable	the school one thank	the school is s vary is ms mfe vfe is vne (?)	Shared VIP latrine	the vial my ions is the commdans sne snsl his (?)	
541 Male	12-17 years	4 Yes	Every day	Very Clean	Safe	Comfortable	the school latrines is dirty (dirty)	the school latrines is by bacor (bad because) the pupu can on the grown (ground)	Private pour-flush commode	the school latrines is good yes are (!) do not like the way they using the latrines	
542 Male	12-17 years	4 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	because they can lick it (lock)	the school latrines is good the stufen (student) can or a rain the latrines	Shared VIP latrine		
543 Male	12-17 years	4 Yes	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	the comfortable for me	the school is very dirty	Shared pit latrine	VIP latrines is very dirty for me	
544 Female	12-17 years	4 Yes	Every day	Very Clean	Safe	Very Uncomfortable	the latrines is small (smelling)	is good because we can clean every	Private VIP latrine	we have the latrines but it is very small in sain (size?). Thank for information	
545 Male	12-17 years	4 Yes	2-3 times a week	Very Clean	Very Safe	Comfortable	is the pump (pump) and latrines	our school did have a good commode	Private pit latrine	the only bad things is the cent (scent?)	
546 Male	12-17 years	4 No	Every day	Very Dirty	Not Safe	Not Comfortable	because the school latrines is very dirty that is not safe for us	the bed (bad) part of the latrines is too ugly and dirty	Private VIP latrine	the school latrines is very bye (bad) for us so your please form a new latrines for us to be safe	
547 Female	12-17 years	4 Yes	1 time a week	Very Dirty	Not Safe	Very Uncomfortable	the school latrines is not safe	the school latrines is smelling	Private pour-flush commode	no safe drinking water and the water we can drink is smelling	
548 Male	12-17 years	5 No	1 time a week	Dirty	Not Safe	Not Comfortable	the school latrine is clean.	the water is by	Private VIP latrine	so by the school VIP by	
549 Female	12-17 years	5 Yes	2-3 times a week	Clean	Safe	Comfortable	I feel good about the school latrines because it is clean		Shared pit latrine		
550 Male	12-17 years	5 Yes	2-3 times a week	Clean	Safe	Comfortable	the school latrines is not good because dirt is in the latrines	the latrines door and window is very bad	Shared pit latrine	The VIP latrines is very bad.	
551 Female	12-17 years	5 Yes	2-3 times a week	Very Clean	Safe	Comfortable	inside the latrines is ver good	my latrines not bed good	Private pour-flush commode		
552 Female	12-17 years	5 Yes	2-3 times a week	Very Clean	Very Safe	Comfortable	inside the latrines is ver good	my latrines not bed good	Private pour-flush commode		
553 Female	12-17 years	5 Yes	2-3 times a week	Very Clean	Very Safe	Comfortable	Inside the latrines is ver good	my latrines not bed good	Other	shared pit latrines, shared pour-flush commode	
554 Female	12-17 years	5 Yes	2-3 times a week	Clean	Safe	Comfortable	Inside the latrines is very good	my latrines is not bad it is good	other	private VIP latrine, Private pour-flush commode	
555 Male	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	the school latrines is very bad	the ho (whole) latrines is very bad	Shared pour-flush commode	the ho (whole) thing one have to say about the latrines is very bad	
556 Male	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	the school latrines is very bad	th ho (whole) latrines is very bad	Shared pour-flush commode	the ho (whole) thing are (!) have to say is to change the latrines	
557 Male	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	the school latrines is very bad	the ho (whole) latrines is very bad	Shared pour-flush commode	the ho (whole) thing are (!) have to say is to change the latrines	
558 Female	12-17 years	5 Yes	2-3 times a month	Very Clean	Not Safe	Not Comfortable	the school is very dirty we the school late	the school is very bad	Shared pit latrine	the school latrines is very bad it is not safe	
559 Female	12-17 years	5 No	1 time a month	Dirty	Very Unsafe	Very Uncomfortable	is not good		Private pit latrine	the school VIP is latrines good	
560 Female	12-17 years	5 Yes	No answer	Very Clean	Not Safe	Not Comfortable	the school is very dirty	the school latrines is bad	Private pour-flush commode	the school latrines is very dirty it is not safe	
561 Female	12-17 years	5 Yes	1 time a month	Clean	Safe	Not Comfortable	the school latrines is not too cleanes. Becwer (because) no good catch/carh (care?)	of (if) you fishnt (finsh) uncan the latrines on water to whast (wash) you hands.	Shared VIP latrine	The VIP latrines is very bad.	
562 Male	18-20 years	5 Yes	Every day	Dirty	Safe	Comfortable	The school latrines is very good.	Around the latrines the bush grow around the latrines.	Private pour-flush commode	My comment to the is to clean the latrines.	
563 Female	12-17 years	5 No	1 time a week	Dirty	Not Safe	Not Comfortable	our school latrines is not safe it is very bed (bad)	the school is very bed (bad)	Shared pit latrine	the VIP latrines is very bed (bad)	
564 Male	12-17 years	5 No	2-3 times a week	Very Dirty	Safe	Very Uncomfortable	The school latrines is not safe but it is dirty	The latrin dool (door) and window is very bad.	Shared pit latrine	No l mades will pooping in dooy (door) gonnu?	
565 Female	12-17 years	5 No	1 time a week	Clean	Safe	Comfortable	the school latrines is very bad	the latrines room is very bad	Private pit latrine	the school latrines is very very bad	
566 Male	12-17 years	5 Yes	2-3 times a week	Clean	Safe	Comfortable	Inside the latrines is very good	My latrines not bad good	Other	shared pit latrines, shared pour-flush commode	
567 Male	12-17 years	5 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	Inside the latrines room is very dirty	The latrines is very bad. They a lot cut up the grass	Private VIP latrine	I when (want) you people to please mark (make) the latrines comfortable	

568 Male	12-17 years	5 Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	We need a school latrines to be built (built) because these latrines are not safe	The school latrines is not safe because it is very dirty	Shared pit latrine	The comments is the VIP latrines is bad	
569 Male	12-17 years	5 Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	We need a school latrines to be because that we need in the school	the school latrines is very bad we need a good school latrines	Outside (Bush)	The comments is the VIP latrines is bad	
570 Male	12-17 years	5 Yes	2-3 times a week	Very Dirty	Not Safe	Very Uncomfortable	the school latrines is very by (bad) because it is not clean	the school latrines is not good because toilet (toilet) is all over in the latrines	Other	This latrines are (I) once (want) it to be very very very good	Outside (bush), shared pit latrine, shared VIP latrine
571 Female	12-17 years	5 Yes	1 time a week	Dirty	Safe	Not Comfortable	the room is very bad	the school latrines is very by (bad)	Shared VIP latrine	the school latrines is bad	
572 Male	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is not good because is not clean one one time it can be good	The school latrines is not good because toilet is good for human beln (being) smell it	Other	The VIP latrine is clean but can not used it	Outside (bush), shared pit latrine, shared VIP latrine
573 Male	12-17 years	5 Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable	every day it can be bad	Outside (Bush)	I want (want) you to make the latrines good I went (want) you to please make your latrines clean	
574 Female	12-17 years	5 No answer	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable	The school latrines is ver bad	Private VIP latrine		
575 Female	12-17 years	5 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school look very beneficial so I can use (use) it fast		Other	I one (want) you to make latrines better.	Outside (bush), private pour-flush commode, Shared pour-flush commode
576 Male	12-17 years	5 No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines are unuseful to us it is very dirty	A school latrines are very bad because the place is not safe for us to used	Private pour-flush commode		
577 Male	12-17 years	5 No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is not good so we need a safe latrines.	The pupu in the latrines is all around in latrines	Private VIP latrine	My comments regarding on the school latrines I want you people to please renovate our school latrines	
578 Male	12-17 years	5 No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines are are not good, so we need a safe latrines for our school.	The school latrines are not safe for the student and teachers in the school very dirty.	Private VIP latrine	My comments regarding VIP latrine I want you people to renovate our VIP latrines.	
579 Female	12-17 years	5 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very unsafe	The school latrines is bad	Private VIP latrine	The school VIP latrines is good.	
580 Female	12-17 years	5 Yes	1 time a week	Very Dirty	Very Unsafe	Not Comfortable	The school latrines is not comfortable	is very bad	Private VIP latrine	I want bathroom in my latrines	
581 Female	12-17 years	5 Yes	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	Nothing (nothing) is beneficial	The school latrines is bad	Private pit latrine	We need hand pump after using the latrine, we need comfortable latrine	
582 Male	12-17 years	5 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines look very beneficial so I can not use it fast	What I don't like in the latrines is because they can po on the slt (seat)	Other	I thank you can please bilud (build) new latrines for the school.	Outside (bush), private pour-flush commode, Shared pour-flush commode
583 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty	The school latrines is very bay (very bad)	Private VIP latrine	I one (want) you to make latrines better.	
584 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty	the school latrines is bad	Private pour-flush commode	The school latrines is very bad the latrines is not safe. Because is very dirty	
585 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty	The school latrines is very bad	Private pour-flush commode	The school latrines is very dirty. if you in the class you samils it.	
586 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Very Comfortable	is not good	very bad	Outside (Bush)	the school VIP latrines is good	
587 Male	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	the school latrines is very bad	in the latrines is very bad	Shared pour-flush commode	Place (please) hap (help) up (us) with a latrines. My name is Joe W Taryon	
588 Female	12-17 years	5 No	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is not good	I not lake (like) the latrines it is bad	Shared pit latrine	I want you to please hape (help) us for your latrines	
589 Male	12-17 years	5 No	No answer	Dirty	Not Safe	Not Comfortable	The school latrines is not safe to used because the place is dirty	The school latrines is very bad because pupu is all over the house	Private VIP latrine	is very clean	
590 Male	12-17 years	5 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines help us to urine	The people pupu all on the floor in the latrines	Outside (Bush)	I want you to rebuille (rebuild) our latrines on the school campus	
591 Male	18-20 years	5 No	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines is pleasant	The people can pupu all on the floor and around the latrines	Outside (Bush)	I want you to repair my latrines. My latrines is not safe.	
592 Female	31 years and above	5 Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable It doed (don't) small (smell) good It small nery (smell) very bad.	The school latrines is very bad	Private VIP latrine	The school VIP latrines is very good.	
593 Male	12-17 years	5 Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	My school latrines is good	My school latrines comfortable	Shared VIP latrine	Plase (please) change the school latrines for us.	
594 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty	In the latrines is very bad	Private pit latrine	I want you to make our latrine better	

595 Male	12-17 years	5 Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	Not thing (nothing) good in the school latrines	Every things is very very bad I don't like the hold too good (hole)	Private VIP latrine	The school VIP latrines is very clane (clean) I love it too good
596 Male	12-17 years	5 Yes	1 time a week	Dirty	Not Safe	Not Comfortable	No thing good in the school latrines	Every thigs (things) is very very bad I do kr like th hold too good (hole)	Private VIP latrine	The school VIP latrines is vers clane I love it too
597 Male	12-17 years	5 Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	My school latrines good	My school latrines comfortable	Shared VIP latrine	False (please) change the school latrines for us.
598 Male	12-17 years	5 Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is not comfortable, it does not smell good, it smell bad	The school latrines is very bad, It can make us sick The school latrines is not clean	Private pit latrine	False (please) change the school latrines for us.
599 Female	12-17 years	5 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty	The school latrines is very bad	Private pit latrine	Please help us for the school latrines
600 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	the school latrines is very dirty	Is very bad but they pupu all over it and the hold (hole) is not good. It is very dirty	Shared pour-flush commode	I one (want) you to make latrines better.
601 Male	12-17 years	5 No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines is very good because they clean it	The school latrines is very good because they clean it	Shared pour-flush commode	The school latrines is very dirty, I whant (want) them to make it better.
602 Female	12-17 years	5 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very dirty If I go the (there) I can not free (feel) comfortable	Is very bad	Shared pour-flush commode	I one (want) you to make latrines better.
603 answer	12-17 years	5 Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	The student can spoirl (spoil) the latrines.	The school latrines is very bad	Other	Outside (Bush), Private VIP latrine
604 Female	18-20 years	5 Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines bag (bad)	The school latrines bag (bad)	Shared VIP latrine	
605 Female	12-17 years	5 Yes	1 time a week	Dirty	Not Safe	Not Comfortable	The school latrines is bag (bad)	The school latrines is bag (bad)	Shared VIP latrine	
606 Female	12-17 years	5 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	The school latrines is by (bad)	The school latrines is by (bad)	Outside (Bush)	
607 Female	7-11 years	5 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	good us for me	it small bad (smell?) the school latrines is bad	Outside (Bush)	Are (!) don't love the school latrines
608 Female	12-17 years	5 Yes	2-3 times a month	Very Dirty	Not Safe	Comfortable	the school latrines is bad	the school latrines is bad	Outside (Bush)	
609 Female	12-17 years	5 No	1 time a week	Very Dirty	Not Safe	Not Comfortable	the school latrines not good	the pupu on the flow (floor) is not good	Private VIP latrine	
610 Female	12-17 years	5 No	1 time a week	Very Dirty	Not Safe	Not Comfortable	the school latrines is not good	the pupu on the flow (floor) is not good	Private VIP latrine	
611 Female	12-17 years	5 No	1 time a week	Very Dirty	Not Safe	Not Comfortable	the school latrines is bad	the school latrines is bad	Private pit latrine	
612 Female	12-17 years	6 No	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	the school latrines is good because is clean	if the latrines is bod (bad)	Private VIP latrine	We want your to please
613 Male	12-17 years	6 Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school latrines is good because is clean	if the latrine is dirty is bad	Private VIP latrine	People always use the posh has latrine I this like that I want your to please tell the teacher about this probleme think you for your understanding (use the porch as latrine) My name is Archia T Tarley
614 Male	12-17 years	6 No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	I understand that the school latrines got to have a commode but it is not like that. Other toilet on the seat, dine (clean) their self on the wall, that is not good.	What is bad about the latrines I don't like is other use the wall the a thesire (tissue) other toilet on the seat	Private pour-flush commode	yes and I coat that latrines is very very bad please help us. That is the comment
615 Male	12-17 years	6 No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable			Private pour-flush commode	the latrine is very by (bad)
616 Female	12-17 years	6 No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is very importance because if some girls or boys want to use it	The school latrines is very dirty so some of us do not like to use it	Shared VIP latrine	The other pepe In the latrines some pupu Infrom (In front) the latrines. That is what the latrines not good.
617 Female	18-20 years	6 No	No answer	Very Dirty	Not Safe	Very Uncomfortable	school is good to seant I latrines	the pupu is good form as	No answer	the school latrines is not save (safe) because we do not use
618 Female	12-17 years	6 No	1 time a week	Very Dirty	Not Safe	Not Comfortable	the school latrin is very good because if some girls and boys want	the school latrin is very bad because other friend pepe on the fendre	No answer	The other pepe In the latrines some pupu Infrom (In front) the latrines.
619 Male	12-17 years	6 No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	school latrines keep you safe from run stomach at school	the school latrines is bad because they latrines as community latrines	Private pit latrine	the school latrines is not good because they use the wrold (wall) as a tissue
620 Male	18-20 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	I like the school lodries (latrines) because: if you jau gav our (?)	the school is very caod (?)	Other	my house b
621 Male	18-20 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	I like the school latrines because if you Jan (Jan... need to go) you are will (always) use it that is the very good thing I like	when the school latrines is bad you don't aver (ever) to use it	Private pit latrine	the private latrine all that I oto about private VIP is very good
622 Male	18-20 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	I like the school latrines because if you Jan (Jan... need to go) you out	the school is very good	Other	my school latrines very save (safe) my house bathroom

623	Female	12-17 years	6	No	No answer	Very Dirty	Not Safe	Very Uncomfortable	school latrines is dirty	the pupu is all around the latrines	Private pour-flush commode	the school latrines is not save (safe) because we do not use tests to clean our pupu
624	Male	18-20 years	6	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	school latrines is very bad to us because if we don't (don't) have school latrines we all will used the bush	what is negative to me is about having water to wash (wash) our hands and soap (soap). If we don't (don't) have it will be bad for us.	Private pit latrine	Sometime we fill (feel) bad about our school latrines because they are some people who do not attend (do not attend) our school coming from public place to use our school latrines that is not good
625	Male	18-20 years	6	Yes	2-3 times a week	Dirty	Not Safe	Very Uncomfortable	the beneficial of a latrines is because use for tulle	school latrines and it is bad (bad) you can feel sick and if not bad you can feel fine	Private pit latrine	the school latrines is not good we are
626	Male	18-20 years	6	Yes	Every day	Dirty	Not Safe	Not Comfortable	the people latrines not good for people to use	school latrines (latrines) look dirty	Outside (Bush)	the additional (additional) to this is the VIP latrines
627	Male	18-20 years	6	Yes	Every day	Very Clean	Safe	Comfortable	school latrines beneficial (beneficial) of a latrines is because we	school latrines and it is bad (bad) you can feel sick and if not bad you can feel fine	Private VIP latrine	the school latrine is not good because they the latrines is not plenty (plenty), so we can do one if the time
628	Male	12-17 years	6	Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	the school latrines is very good to the student	when the latrines is dirty we can feel bad about it.	Shared pour-flush commode	
629	Male	18-20 years	6	Yes	Every day	Very Clean	Very Safe	Very Comfortable	you can feel by (feel) bad	keep safe clean when that you me	Private pit latrine	sometime by (bad)
630	Male	12-17 years	6	No	Every day	Very Dirty	Very Unsafe	Very Uncomfortable	school latrines sowo (should) be clean and smell (smell) good and very comfortable	school latrines not have zen with door, window, lock you mush (must) have lock school latrine and it bad you can feel sick and if not bad you can feel fine	Private VIP latrine	the school latrine is not safe because other people come from outside come pupu in the school latrines
631	Male	18-20 years	6	Yes	1 time a week	Very Dirty	Not Safe	Comfortable	the beneficial of a latrines is because use for tulle	school latrines and it is bad (bad) you can feel sick and if not bad you can feel fine	Private pit latrine	is not safe
632	Female	18-20 years	6	No	1 time a week	Very Dirty	Very Unsafe	Very Uncomfortable	the school latrines is good beruse (because) is clean	if the latrines is bad (bad)	Other	VIP we want your to please us with good latrines
633	Female	12-17 years	6	Yes	1 time a week	Dirty	Not Safe	Not Comfortable	I is beneficial your school the good of the latrines is because you	the school latrines is very dirty	Private pour-flush commode	the school latrine (latrine) give disease
634	Female	12-17 years	6	Yes	1 time a week	Dirty	Very Unsafe	Very Uncomfortable	the good of the latrines is because you have to have latrines	the school latrines is very dirty	Private pour-flush commode	the school latrines is dirty and have disease.
635	Male	18-20 years	6	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	latrines is good for turlate (toilet) and the only good thing on latrine is the floor zines and calberly (?) (floor, zinc, ....)	the bad thing on school latrines is the calber and the floor and the bush around it.	Private pit latrine	the latrines for school is not for a example if you look around the latrine you will see bush grass and also paper. So we a prelent to you people for good latrine in our very schools.
636	Male	12-17 years	6	Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	the only goods thing are like on the school latrines are the floor zines and the pint (floor, zinc, paint)	the bad things on the school latrines is the children use it bad and also the grass	Private pit latrine	the school VIP latrine comonts (comments) other people use the latrine are the back clean but
637	Female	18-20 years	6	Yes	1 time a month	Very Clean	Very Unsafe	Not Comfortable	the school latrines is not too good for chnild (child) to go in it	about school latrines is you get	Private pit latrine	the teach latrine not good to go in tin tin dirta
638	Male	12-17 years	6	Yes	1 time a week	Dirty	Not Safe	Very Comfortable	the school latrines is very say	Mary is a bya in anging that is in gingesig ?	Other	the school latrines is very God
639	Female	18-20 years	6	Yes	2-3 times a week	Clean	Very Safe	Very Comfortable	are your word perdwated please is use to ru good torn at communtio ?		Private pit latrine	the school sitstry
640	Female	12-17 years	6	Yes	1 time a month	Dirty	Very Unsafe	Not Comfortable	the school latrines is not too good for chnild (child) to go in it	the bad thing (thing) about school latrines is you can get	Private pit latrine	the teach latrines is not good to go in it, it is dirty the school latrines is very dirty because no ones can clean it so its very dirty for ous. is not self (safe) for ous.
641	Female	18-20 years	6	Yes	2-3 times a month	Very Dirty	Not Safe	Not Comfortable	I feel bad about the latrines that I have in my house because it is dirty	school latrines is looks lake smell (small) room but it have door but on wendes.	Private VIP latrine	
642	Female	21-25 years	6	No	1 time a week	Very Dirty	Very Unsafe	Not Comfortable	the school latrines is good to be in the community	in the school latrines is by (bad)	Private VIP latrine	the school latrines is not good
643	Male	12-17 years	6	Yes	Every day	Very Dirty	Not Safe	Not Comfortable	plase (please) explain what is beneficial or bad about the school latrines. The school latrines is not good for us so we want some went to help us	somebody mass (mess) us the latrines is not good for us to use it	Outside (Bush)	The school latrines is safe for using it, it's not good why the school latrines
644	Male	18-20 years	6	Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school latrines is very clean if you have latrines is you community you I (are) safe	If your school is not have latrines is very by (bad) if your school is have latrines is good	Outside (Bush)	A school latrine is very safe if you clean your school latrine is Good to do that in your school



645 Male	18-20 years	6 Yes	Every day	Very Dirty	Not Safe	Not Comfortable	the school latrines can help us when we inter school	All way went (when) we enter class the latrines can cause (cause) sickness	Outside (Bush)	The latrines not good for us. So we want you people to please help us to bring latrines to us
646 Male	12-17 years	6 Yes	Every day	Very Dirty	Not Safe	No answer	school latrines help us in whenever you sick at school if you want to use the latrines	Sometime you want to use the latrines, if you at ah the latrines you can feel bad.	No answer	the school VIP latrines very dirty and bad
647 Male	12-17 years	6 Yes	Every day	Dirty	Not Safe	Not Comfortable	The school latrines is not good for us so we want same want (someone) to help us.	If your school latrines is not good it will by (be) bad for us.	Outside (Bush)	The school latrines is not safe It is so dirty we want same want (someone) to please help us for safe latrines
648 Male	12-17 years	6 Yes	2-3 times a week	Clean	Very Safe	Very Comfortable	you beneficial for latrines by cleaning it		Private pit latrine	the school pit latrine is comfortable and also it is clean for the school
649 Male	12-17 years	6 Yes	1 time a month	Very Dirty	Very Unsafe	Very Uncomfortable	the school latrines is not good for people to use	school latrines look dirty	Outside (Bush)	
650 Male	12-17 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	the school latrines is very clean	the school latrines is very clean	Private pit latrine	the school VIP latrines is very clean
651 Male	12-17 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	our school latrines is not dirty, but very clean	the school latrines is very good	Private pit latrine	the school VIP latrines clean
652 Male	12-17 years	6 Yes	2-3 times a week	Very Dirty	Not Safe	Not Comfortable	the good about the school latrines is the floods (floors) are clean and also the paint of school is fine (zinc, paint)	the bad about school latrines is the children (children) use the wall to clean their boat (buit) on it.	Private pit latrine	the school VIP latrines comments the other people also the back of the latrines
653 Male	12-17 years	6 Yes	2-3 times a week	Very Clean	Very Safe	No answer	the school latrines is very clean	the school latrines is not dirty but is very clean and good	Private pit latrine	the school VIP latrines is very clean
654 Male	12-17 years	6 Yes	2-3 times a week	Dirty	Not Safe	Very Comfortable	the school latrines help us when we are in school	If the school latrines is bad you can see some insects fly	Private pit latrine	behind the school latrines not safe because you see grass and other thing
655 Female	12-17 years	6 Yes	1 time a week	Very Clean	Very Safe	Comfortable	The good about school latrines I know I good in the community or school campus.	The bad about the school latrines don't unsue it	Private pour-flush commode	The school latrine is very clean, and the teacher latrines is very clean
656 Male	12-17 years	6 Yes	2-3 times a week	Very Clean	Very Safe	Very Comfortable	This school latrines is very clean	the latrines can be smelling (smelling)	Private pit latrine	the latrines is very safe
657 Male	18-20 years	6 Yes	1 time a week	Very Dirty	Very Unsafe	Not Comfortable	Well to my own understanding It is good to have latrines because latrines safe (save) us from bad deases (diseases)	Well It is bad not to have school latrines because it is good for school have latrines to safe (save) students.	Private pit latrine	Here in our school our latrines is not good It is very dirty and not safe to used
658 Male	12-17 years	6 Yes	Every day	Very Clean	Not Safe	Not Comfortable	the school latrines is not safe so it can make us sick	the school latrines building is fine but inside is very bad enough.	Shared pit latrine	The school latrines is not safe for the student.
659 Male	12-17 years	6 Yes	Every day	Dirty	Not Safe	Very Comfortable	The school latrines is very dirty, but that is the our latrines that we have the latrines is very good for hummo (human) body	when then school latrines is bad it can make you net (not) feel well (sick)	Private pit latrine	the school VIP latrine is not good
660 Male	12-17 years	6 Yes	Every day	Very Dirty	Not Safe	Very Comfortable	the school latrines is not good	this pupu can dirty	Private VIP latrine	this not good
661 Female	12-17 years	6 Yes	2-3 times a week	No answer	Very Safe	No answer	Well in my own understanding It is good to have latrines and it is good.	the school latrines is very clean (clean)	Private pit latrine	the school VIP latrines is good
662 Female	12-17 years	6 Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school latrines is good	the school latrines is clean	Private pit latrine	the school VIP latrines very clean
663 Female	12-17 years	6 Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school latrines is good.	the school latrines is clean	Private pit latrine	the school VIP latrines is clean
664 Female	12-17 years	6 Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school latrines is good.	the school latrines is clean.	Private pit latrine	the school VIP latrines is very clean.
665 Male	18-20 years	6 Yes	Every day	Dirty	Not Safe	Not Comfortable	The beneficial is harmful (harmful). The good is you feel free	Whenever the school latrines have no door no good satting (seat) area sick can be more	Outside (Bush)	The additional to this is the VIP latrines is not comfortable because it have no key and no good door
666 Female	12-17 years	6 Yes	1 time a week	Very Dirty	Not Safe	Not Comfortable	the school latrines is very good to our and we use it	the school latrines in very becaue	Private pit latrine	
667 Male	12-17 years	6 Yes	Every day	Dirty	Not Safe	Not Comfortable	Latrines my be (may be) safe please help us for or latrines to be safe	the latrine can be smell	Private VIP latrine	I want your to please help us with our latrines with you be it. God will bless (bless) your. My name is Mercy Gaye Tweh
668 Male	12-17 years	6 Yes	Every day	Very Clean	Very Safe	Very Comfortable	the school is very clean	the latrines can be smelling (smelling)	Private pit latrine	the school latrine is very slave (safe) for people, I love it.
669 Female	7-11 years	6 Yes	Every day	Dirty	Safe	Comfortable	the latrines can some time clean and some the dirty	the school latrines can be litter ba dirty	Outside (Bush)	The school VIP latrines can be very clean because they can take care of it very good
670 Male	12-17 years	6 Yes	Every day	Very Dirty	Very Safe	Very Comfortable	this school latrines this very clean	the latrines can be smelling (smelling)	Private pit latrine	the school latrines in not save to where they build it (location)

671	Male	12-17 years	6	Yes	Every day	Very Clean	Very Safe	Very Comfortable	the latrines is good because it cannot smell and we have washing hand pump after using the latrine	If the latrine is not safe we will get sick because the little children puping around the latrines is very bad	Private pit latrine	The pit latrine is very good to the student because some of us left our home and come on campus and finally we have runing stomach the latrines is not save. Some of us are getting sick from the latrines. May God be with your
672	Male	12-17 years	6	Yes	Every day	Very Dirty	Not Safe	Very Comfortable	the latrines is very bad	the	Private pit latrine	private pour-flush commode, shared VIP latrine
673	Female	12-17 years	6	Yes	2-3 times a month	Dirty	Not Safe	Not Comfortable	you good	the	Other	VVIP
674	Female	18-20 years	6	Yes	Every day	Dirty	Not Safe	Not Comfortable	good about school latrines is good for school	the school latrines is can smell (smell) because the little children puping around the latrines is very bad	Other	private pour-flush commode, shared pour-flush commode, shared VIP latrine
675	Male	12-17 years	6	Yes	Every day	Very Dirty	Not Safe	Very Comfortable	If you not have a latrines on the cample (campus) you can fee sick	when we clean the school latrines if co (can) very good and safe	Private pit latrine	we want your to please help us with good latrines the latrines is not save (safe) some of us are getting suck from the latrines
676	Male	No answer	6	Yes	2-3 times a week	Very Dirty	Not Safe	Very Comfortable	when we clean the school latrines it co (can) very good and safe	when we clean the school latrines if co (can) very bad and not safe	Other	our school latrines is not good for VIP outside (bush), shared pour-flush commode
677	Female	12-17 years	6	Yes	2-3 times a month	Dirty	Not Safe	Not Comfortable	a can so safe you a can (it can) help you. For you to no run around	when school latrines not have lack (lock) can be very dirty	Shared VIP latrine	VIP latrines is not good
678	Female	12-17 years	6	Yes	2-3 times a month	Dirty	Not Safe	Not Comfortable	a can so safe you a can (it can) help you. For you to no run around	when school latrines not have lack (lock) can be very dirty	Shared VIP latrine	VIP latrines is not good to use
679	Female	18-20 years	6	Yes	Every day	Dirty	Not Safe	Not Comfortable	or good the school latrines school	the school latrines can smell (smell) that mean is not good at all, went (when) you go in the you will get sick	Shared pit latrine	we want to the school VP latrines
680	Male	18-20 years	6	Yes	1 time a week	Very Clean	Very Safe	Not Comfortable	is very good because your use it all the time	that mean is not good at all, went (when) you go in the you will get sick	Outside (Bush)	went (when) you will see something lask dirt in the bathroom

Question No.	1	2	3	4	5	6	7	8	9	10	11	12		
Survey No.	What is your gender?	What is your age?	What is your position at the school?	Do you use the school latrines?	If yes, how often do you use the latrines?	How clean are the school latrines?	How safe are the school latrines?	How comfortable are the school latrines?	Please explain what is beneficial or good about the school latrines.	Please explain what is negative or bad about the school latrines.	Where do you go to the bathroom at your house?	Any additional comments regarding the school VIP latrines.	Other: At house s	Comment
1	Male	51-60 years	Teacher	Yes	Less than once a month	Dirty	Not Safe	Not Comfortable	The school latrines are helpful because they help students to relieve themselves. They are well structured, and contained bassins to wash hands after use.	Latrines are misused. The entrances and floors are used instead of the pits; toileting on the floor and using wall of latrines as tissues. As a result, the ventilation is uncondusive.	Private pour-flush commode	The latrines, to be well presentable, must be well protected. Ex: The surrounding inhabitants are the main subjects that contaminate the toilets or latrines. They damaged the doors of the latrines at night and do whatever necessary in their sight, thus, causing great embarrassment to the school. There should be security to protect the latrines.		681
2	Male	31-40 years	Teacher	No	No answer	Very Dirty	Not Safe	Not Comfortable	The school latrines is not beneficial, it has been mismanaged by the students and the school authority is not making any effort to make the school latrines clean. Toilet are all over the place. For this reason the school latrines is not beneficial or good.	1. is not properly managed 2. Toilet all over the place 3. Students urinate outside the toilet room	Shared pit latrine	My additional comments has to do with the school administration, the administration has to put in proper management system in place by employing people to properly manage the school latrines.		682
3	Male	41-50 years	Administration	Yes	2-3 times a month	Dirty	Not Safe	Not Comfortable	School latrines is very good for both teachers and students in turn of released.	School latrines can only be negative or bad when there is no proper care.	Private pit latrine	The only recommendation pertaining to VIP latrines is proper care with security.		683
4	No answer	51-60 years	Teacher	Yes	Every day	Very Clean	Very Safe	No answer	The school latrines is not in good condition because people from all over using it.	The bad part of school latrines is that people comes from all over to use it.	Private pit latrine			684
5	Male	31-40 years	Teacher	Yes	Every day	Clean	Safe	Comfortable	It help us a lot when we are at work to stay.	The bad side about the school latrines is that other people introed in the school latrines after work.	Private pit latrine			685
6	Male	41-50 years	Teacher	Yes	Every day	Clean	Safe	Comfortable	While in school, it helps us to ease ourselves. It also helps our students and support staff.	Whenever breeze blows, the air from the latrines polute the classe s.	Private pit latrine			686
7	Female	41-50 years	Teacher	Yes	Every day	Clean	Safe	Comfortable	The school latrines are good because it helps us the teachers to keep on their jobs.	The bad side of the school latrines is people come from all over to use it. Because there is no school fence.	Shared pit latrine			687
8	Male	51-60 years	Teacher	Yes	Every day	Clean	Very Safe	Comfortable	It helps to keep the school environment clean and keeps students on campus.	In the absence of the latrine, school environment will be dirty and smells bad.	Shared VIP latrine	Principal and staff need to have private pour-flush commode.		688
9	Male	51-60 years	Teacher	Yes	Every day	Clean	Safe	Not Comfortable	It helps to ease the body.	It smells all in the classes.	Private pit latrine	It is too close to the classes that cause the latrine to smell badly.		689

10	Male	41-50 years	Teacher	Yes	1 time a month	Very Dirty	Unsafe	Very Uncomfortable	What will make the school latrines to be good is care, use what will stop the scent from spreading to the school classes over the campus. We need better latrines than what we have now.	It is very bad to mention how dirty and damage the latrines are on our school campus. While in class, the latrines usually smells, especially when the sun is shining and the class rooms are heated when teaching. Sometimes, students would begin to vomit and going out without permission. When the rain fall, the latrines is also polluted and the rain when wash the area it sometimes spread the bad or damaged toilet all around the back of the school.	Other	Will like an improvement and at lease if the latrine will not be relocated it can be kept clean and renovated to a better latrines, if not the safety of our students will not be protected.	Private pit latrine and shared pit latrine	690
11	Male	61 years or above	Administration	Yes	Every day	Clean	Safe	Comfortable	The school latrine sare good. They are good because time to ease ourselves we go there freely and ease ourselves.	We cannot actually say the school latrines are bad because we or the school that suppose to clean are cleaning them both in and out. Beside, when the locks spoiled we replaced them by buying new locks.	Private VIP latrine	There is no other comment because the comment we have had been made on question number (10) ten. RIDA provides soap, cans for use after using the latrines. The only recommendation we have is government should provide security to watch over the school properties so that the se properties can be in good and healthy condition.		691
12	Male	31-40 years	Staff	Yes	Every day	Very Clean	Very Safe	Very Comfortable	The school latrines is beneficial to us in that, the teachers, administration, and staff are using it without going outside the campus to find a latrine and all around the latrine is very clean.	The negative part of the school latrine is there are two schools using the latrines, the high school and the elementary school. The high school is taking good care of the latrine that was well built, but the elementary school is misusing it.	Private pour-flush commode			692
13	Female	41-50 years	Staff	No	No answer	Very Dirty	No answer	Very Uncomfortable	Nothing beneficial nor good.	The entire sanitary condition is a mess.	Private VIP latrine	The school does not have one.		693
14	Male	51-60 years	Staff	Yes	1 time a week	Clean	Safe	Comfortable	The school latrine always help the students and teachers no to go out of the campus to latrines use s.	Negative part is the community is not uses the latrines.	Outside (Bush)	Yes, we need addition four classroom to be built at the school campus. We also need your help for the addition classrooms.		694
15	Female	41-50 years	Teacher	Yes	2-3 times a month	Clean	Safe	Comfortable	The school latrines is good, it helps us, the teachers, to use it, instead of going out of campus.	The negative aspect about the latrines is plenty people use them because there no fence.	Private pit latrine			695

16	Male	51-60 years	Administration	Yes	Less than once a month	Clean	Safe	Comfortable	The beneficial or good about the school latrines are; It helps: 1 both the students, teachers, staff and visitors at the school to easily release themselves. 2 to safe the school environment of pollution.	The negative thing(s) about the school latrines is that people from different background or attracted with disease use the same latrines.	Other	The additional comments regarding the school VIP latrines will be a recommendations to the education's paterners and donors; I recommend that benefitting school(s): 1 be well protected or fence to prevent the community from missusing the facility. 2 fencing of the school campus must be a propriaty to protect the modern latrines and its environment. 3 latrine's chemicals, soaps, and other appliances be made available to treat or clean the latrines either weekly or monthly to avoid campus pollution	Private pit latrine and private pour-flush commode	696
17	Male	31-40 years	Teacher	Yes	1 time a week	Clean	Not Safe	Comfortable	What is good about the latrines is anytime you there to use it, it can always be clean, that alright to be used.	What is bad about the latrine is people who come from outside of the campus can dirty the latrine at any time.	Shared pit latrine		family member latrine	697
18	Male	41-50 years	Teacher	Yes	Every day	Clean	Very Safe	Comfortable	It helps us not to be exposed to the outside. It also help us to be on campus all the time. Before we always leave the campus to go into the bush.	The bad part of the school latrine is we have no care taker. We have three schools using the same campus.	Shared pit latrine	We say thanks, very much to Sis Sarah Ness for her effort to improved sanitation within our school. She was very instrumental in the building and teaching of how to take care of the VIP latrine. She put in place how to wash hand and how to control urine within and around the campus.		698
19	Male	51-60 years	Teacher	Yes	2-3 times a week	Clean	Not Safe	Not Comfortable	The latrines are good in the sense that they can help you ease yourself if you are in jam.	The negative things about the school latrines is that they are exposed to the community dwellers. There is no restrictions because the campus is not properly fences and the latrines are being used by two sessions - morning and afternoon.	Private pour-flush commode	The latrines are not flush commode that I am used to at my house. So I can only use them is I am seriously jammed.		699
20	Male	41-50 years	Staff	Yes	2-3 times a week	Clean	Safe	Not Comfortable	Keeps students on campus	very small inside	Outside (Bush)	Would be good to enlarge it small.		700
21	Male	41-50 years	Administration	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines is not good because it is not clean, not safe, and always dirty. So, I am not benefiting anything from the latrines.	The negative thing about the school latrines is it does not have space for the user. Inside of the latrines are very smaller that are not comfortable why using them.	Shared pit latrine	I would like to appeal to this organization to please help the school with good latrines so as to enable us to ease ourselves freely.		701
22	Male	41-50 years	Teacher	Yes	2-3 times a week	Dirty	Very Unsafe	Not Comfortable	The beneficial about the school latrine should be special care takers and this care taker should be able to receive little appreciation or incentive. Shouldn't be only government.	The negative or bad about the school latrines is no good care. The entire community used it because no fence, no care taker.	Shared pit latrine	Regarding to the school VIP latrines, there is no restriction. Many times, the key cannot be available to teachers. Sometime, those who had the key borrow it to students who are their relatives or common unity friend.		702

23	Male	41-50 years	Administration	Yes	2-3 times a week	Dirty	Safe	Not Comfortable	The beneficial or good thing about the school latrines is that it keep the student on campus in terms of defecation, urination, etc. Before when there was no latrines student leave the campus to go defecate outside.	The negative or bad thing about the school latrines is that the elementary school sharing it with the high school is misusing the latrines, that is why it is not comfortable.	Shared pour-flush commode	The school latrines are there to help ease the defecation problem on campus, but the maintenance and the community members are the problem to these latrines on campus. We need maintenance and proper use of these latrines to avoid contracting disease.	703
24	Male	41-50 years	Staff	Yes	2-3 times a month	Clean	Safe	Comfortable	The good about the school latrines is that people can not leave the school campus to go in the community for the use of latrine.	The negative part of the school latrines is the rooms are very small, the doors are always open as a result the latrines are not used properly.	Shared pit latrine	Toilets can be on the seats (latrines). The school VIP latrines should be up to standard.	704
25	Male	51-60 years	Teacher	Yes	2-3 times a week	Dirty	Not Safe	Not Comfortable	The school latrines help keep the staff and the students on campus. Moreover, they can use these facilities at any time they wish.	The school latrines can be very dirty and very unsafe to use: hard papers are used instead of tissue, users defecate or urinate on the floor, and the authority may find it difficult to clean or use the chlorine.	Private pit latrine		705
26	Male	51-60 years	Administration	Yes	Less than once a month	Clean	Not Safe	Comfortable	The school latrines help to keep the students and teachers on campus	The community members are constantly breaking into the school campus and misusing the facility. Anybody can use the latrines. Even if locked, they can break the lock.	Private pit latrine	The school need to have a latrine inside the office building so that it is not accessible to outsiders. Even the ones that are built outside should be enclosed in wire fence or other durable and strong fence.	706
27	Female	41-50 years	Teacher	Yes	Every day	Clean	Safe	Comfortable	It is used to ease myself.	It is good.	Private pit latrine	It is to be improved.	707
28	Male	31-40 years	Teacher	No	No answer	Very Dirty	Very Unsafe	Very Uncomfortable	The school latrines with regards to sanitary conditions are unfit and are not suitable neither adequate for use due to poor facility(ies).	The school latrine is always menses up, they are not being properly used nor are they maintained. There are lots of litter in and around the latrines.	Private pour-flush commode	I do anticipate for positive change so as to uplift and maintain proper sanitary conditions.	708
29	Male	41-50 years	Administration	Yes	2-3 times a month	Very Clean	Not Safe	Not Comfortable	The beneficial or good thing about the school latrines has door.	1. public usage, 2. unclean, 3. not freshable	Other	Build fresh toilet with guarantee door to prevent public usage.	Private 709